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An index to the eighty-fifth volume of THE RAILWAY GAZETTE *covering the issues from July 5 to December 27, 1946, has been prepared, and is now available free of charge on application to the publisher*

Fuel Restrictions and Temporary Suspension of Publication

As a result of discussions between the Ministry of Fuel & Power and the Periodical Trade Press and Weekly Newspaper Proprietors' Association, it has been agreed voluntarily that publication of all weekly periodicals and trade and technical papers dated up to Saturday, February 15, may take place, as in many cases printing was well advanced when the fuel ban was imposed.

As we are at present advised, there will be a suspension after this date of at least two consecutive issues of all such periodicals, irrespective of whether they are printed or published inside or outside the restricted areas.

Accordingly, it is unlikely that we shall be permitted to produce any further issue of

THE RAILWAY GAZETTE

before that dated March 7

L.M.S.R. Dividend

THE first fruits of the Transport Bill have been tasted by stockholders of the London Midland & Scottish Railway Company. In respect of the year 1946, the dividend on the ordinary stock is to be 2¼ per cent. less tax, which compares with 4 per cent. for 1945. The reason for this decline is to be found in the clauses of the Bill dealing with dividend payments which lay down that, in deciding how much should be paid for the two years 1946 and 1947 together, the Transport Commission is to ensure that dividends paid in these two years must relate only to the net revenue earned in that period. As was pointed out in our issue of January 10, if the boards, in respect of last year, were to decide to distribute funds drawn from reserves, the Commission would reduce the payment in respect of 1947 by that amount. The statement issued by the L.M.S.R. board stated that the net revenue of the company for the year 1946 "ascertained in accordance with the terms of the Transport Bill," was £15,923,000. After paying 2¼ per cent. actual on the ordinary stock, there is a balance of £392,000. The statement adds that in view of various uncertainties in the Transport Bill, the board regards the dividend as, in effect, an interim payment for the two years 1946 and 1947, regarded as one. A year ago the net revenue, including £519,000 arising from earlier years' accounts, was £16,219,000, and to this was added £500,000 from the contingency fund. The amount brought forward to the year just ended was £69,000.

* * * *

Income of Nationalised Undertakings

Some interesting guidance as to the manner in which the Government regards income from nationalised undertakings was given in the House of Commons on February 5, when the Postmaster-General announced that in the financial year 1945-46 the Post Office showed a surplus of income over expenditure, after charging interest on capital, of £36,191,000. This figure was made up of surpluses on the postal services of £15,545,000 and on the telephone service of £20,684,000, less a deficit of £38,000 on the telegraph service. Sir Thomas Moore asked whether some of the profits would be passed on to the public by way of a reduction in postal and telegraph rates, and in reply, the Postmaster said that the finances of the Post Office could not be disassociated from the national finances. From this it would seem that if the railways, when nationalised, make a profit, any expectation that such a profit may be used to reduce either goods or passenger charges, is likely to lead to disappointment. On the basis of the Post Office analogy, it would seem probable the money would not even be used to improve services; it would merely be absorbed into the national exchequer.

* * * *

Lord Balfour of Burleigh on Overseas Trade

Both as a director of the London & North Eastern Railway, and as a banker, Lord Balfour of Burleigh is in close touch with the needs and difficulties of British exporters. His remarks, therefore, in his statement to shareholders of Lloyds Bank Limited, of which he is Chairman, have more value because they emphasise matters which must be of increasing importance as the present sellers' market comes to an end. He urged strongly that our exporters should adopt modern methods of sales promotion in their dealings with the American market, where, he felt, there would be a surprisingly ready outlet for British goods if they were suitably exploited. Instead of relying on resident agents, it would be better to follow the example of those undertakings which recently had established their own sales organisations overseas. Lord Burleigh underlined a point which has been made frequently in our columns. This is the importance of overseas visits by the principals of firms. What is true of the American market applies also to many others, and especially, perhaps, to those in which the British exporter may come in competition with the United States industrialists.

* * * *

Home Railway Traffic Receipts

The return of traffic receipts for the four main-line railway companies and the London Passenger Transport Board for the four weeks ended January 26 shows a decline of £1,099,000 at £23,446,000. As will be seen from the total below, there was a fall of £1,085,000, or over 8 per cent., in passenger receipts

which totalled £12,169,000. Merchandise revenue was £509,000, or 6·2 per cent. down, at £7,305,000. Coal and coke receipts improved by £495,000, or 14·2 per cent., at £3,972,000.

FOUR WEEKS ENDED JANUARY 26, 1947

	1947 £000	1946 £000	+ or − £000	Per cent. + or −
Passengers	12,169	13,254	− 1,085	− 8·1
Merchandise	7,305	7,814	− 509	− 6·2
Coal and coke	3,972	3,477	+ 495	+ 14·2
Total	23,446	24,545	− 1,099	− 4·4

The comparison of current traffic receipts with those for the previous year is affected by the increase in rates and charges which came into effect on July 1, 1946.

* * * *

Overseas Railway Traffics

After losing ps. 784,000 in the fortnight ended January 18, Buenos Ayres & Pacific traffics recovered in the two weeks under review, showing a total increase of ps. 102,000. Buenos Ayres Great Southern, Buenos Ayres Western, and Central Argentine receipts, also, improved upon the preceding year in the fortnight ended February 1, but Entre Rios traffics were ps. 18,400 lower in the second week, reducing the net gain for the fortnight to ps. 6,800. Declines have continued in Central Uruguay traffics, totalling £17,605 in the fortnight, and the aggregate for this railway on February 1 was £74,517 behind the previous year. Some results are compared below:—

	No. of week	Weekly traffic	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres & Pacific* ...	31	2,630	+ 18	69,392	+ 1,759
Buenos Ayres Great Southern*	31	4,936	+738	108 484	+ 5,508
Buenos Ayres Western* ...	31	1,537	+286	39,450	+ 2,551
Central Argentine*	31	3,693	+ 86	93,838	+ 2,979
		£	£	£	£
Canadian Pacific	4	2,247,500	+168,250	5,839,750	+12,500

* Traffic returns in thousands of pesos

Canadian Pacific traffics gained £175,500 in the second fortnight of January, after losses in the first two weeks of the year, and showed an aggregate increase for the month of £12,500.

* * * *

Edison and the Railway

Thomas Alva Edison, who is remembered as one of the world's most prolific inventors, was born on February 11, 1847—just a century ago. He was not a scientist, but rather a man of fertile mind and considerable practical ingenuity, with rugged health and an enormous capacity for hard work. He himself characterised "genius" as one per cent. inspiration and 99 per cent. perspiration. As Edison is widely claimed as "one of the great Americans who have made the industrial history of the country," it is worthy of recall that his father was a British subject (a Canadian) who crossed into the U.S.A. on political grounds as a rebel against the Canadian Government. It was, therefore, fortuitous that the inventor was born and undertook his work outside the British Empire. His first commercial success was the sale at fancy prices from the train of copies of the *Detroit Free Press* in 1862, when news of the Civil War was being sought keenly. With the profit he bought an old set of type, established it in a railway goods wagon, and wrote and printed the *Grand Trunk Herald* while the train was on its journey. This is claimed to be the first news sheet ever printed on a train; its circulation rose to 400 an issue. Later, a telegraphic invention brought him the capital to launch the famous laboratories whence a stream of electrical devices emerged for many years. Edison was a pioneer of electric railway traction in 1880, but only with battery vehicles, and his work in this field had little effect on the main course of development.

* * * *

Basingstoke to London *via* Reading

As the result of the derailment of the 2.20 p.m. express from Bournemouth to London at Byfleet, on December 27, up trains from Basingstoke to London were diverted over the G.W.R. to Reading, where they rejoined the Southern Railway, and reached Waterloo *via* Ascot. Down trains suffered some delay, but were not diverted. This emergency arrangement remained in force until the evening of December 28, when normal working was restored, and, according to the route followed beyond Ascot, added at least 11 miles to the journey of 48 miles from Basingstoke to Waterloo. The importance of the railway from Basingstoke to Reading, as the first stage in this emergency route, is obvious, but it is not realised generally that the distance from Basingstoke to Paddington is only 51¼ miles. That this alternative route has not become widely recognised is due to the fact that passengers have to change at Reading by all services, in both directions, and that several of the connections are by no means well-arranged. The timetable is planned more with a view to providing connections between Oxford and Reading and the Southern Railway than to give a competitive service to and from London. Through trains are run between Reading and Portsmouth and Bournemouth, and bookings from Reading to the West of England, *via* Basingstoke, are in force.

* * * *

Modern Rail Defect Detection

Figures published recently by the Sperry rail service show that the efficiency of its operation is increased materially by more frequent patrolling of the tracks. The latest available statistics give an average efficiency of 84 per cent. if the track is tested once annually, 89 per cent. if twice annually, and 94 per cent. if the detector car patrols four times a year. The meaning of these percentages is that the remaining 16, 11, and 6 per cent. respectively represent rails which break in service, because of the development of internal defects, between one test and the next. To take one specific test, whereas in a particular length of track, on a once-a-year patrol, 58 per cent. of the defects detected in the rails were less than 20 per cent. of the cross-sectional area of the rail-head, and 15 per cent. extended to over 40 per cent., when the same track later was tested from three to six times annually, of the defects detected 83 per cent. were small, and 4 per cent. only were approaching the danger point in size. The disturbing feature of this rail defect detection service in the United States is that the aggregate number of fissured rails is still increasing, even though all new rail laid in for some years past has been controlled-cooled, and thus free from shatter-cracking and liability to the development of transverse fissures.

* * * *

Water Treatment Increases Availability

Those who heard Mr. A. J. R. Walter read his paper on base-exchange water softeners to the Institution of Locomotive Engineers, could not fail to be impressed by the advances in water-treatment technique revealed in his survey, an abridgment of which is published elsewhere in this issue. Many of the most significant successes have been scored in South America where—as Mr. Whalley disclosed at the conclusion of the paper—feed-water conditions were so bad that one company went so far as to order a stainless-steel boiler in the hope that it would be proof against the ravages of corrosion. This paper is timely, and it brings with it a cheering prospect to the protagonists of the steam locomotive, for the greater availability of the diesel has been a frequently-used weapon in the past by those favouring oil engines for transport. Now, however, that argument—thanks to the revolutionary changes chronicled by Mr. Walter—is largely nullified. The increase in mileage of locomotives using correctly treated water is remarkable; washing-out is now a token changing of the water every few weeks; scale and corrosion, those two old enemies, are eliminated; and fireboxes, tubeplates, etc., remain in first class condition for a very long time. These results were only obtained after continuous effort on the part of Mr. Walter and his associates, and the story of their experiments to find a substance which would be non-corrosive to both copper and steel, instead of non-corrosive to steel alone, is a record of a remarkable achievement.

* * * *

From Steam to Diesel Locomotive Production

In a statement at the end of 1946, Mr. Robert McColl, President of the American Locomotive Company, announced that this company, hitherto one of the largest builders in the world of steam locomotive power, expects in 1947 to devote 93 per cent. of its production to diesel-electric locomotives, and 7 per cent. only to steam. It was in 1925 that Alco produced its first diesel shunter; by 1935 some 20 per cent. of its production was of diesel-electric power, by 1941 it was 76 per cent., and by 1946, 90 per cent. In all, the firm has spent $20,000,000 in research and development leading to the new standard Alco diesel designs which materialised last year.

The Schenectady plant has been remodelled for the purpose of mass-producing diesels, in conjunction with electrical equipment by General Electric, on a continuous assembly line. Mr. McColl gave it as his opinion that in the next ten years American railways would carry a heavier passenger and freight traffic than at any other peacetime period in their history, and that the estimated cost of modernisation for this purpose is about $1,600,000,000. In this connection, the American Locomotive Company is not neglecting other forms of motive power. At the present time combustion tests are in progress with a view to building a coal-burning gas-turbine locomotive. Also, the possibilities of applying atomic power to locomotives are being kept well in view, though the speaker put any practical atomic application at 20 to 40 years distant.

* * * *

U.S.A. Railway Revenues and Expenses

ON the day when Mr. C. R. Dashwood, Chief Accountant, Great Western Railway, was telling the Charges (Railway Control) Consultative Committee how the working costs of our railways were soaring, there arrived from the Association of American Railroads, Washington, D.C., its statement of railway revenues and expenses for the half year ended June 30. This shows on a cursory inspection why the Interstate Commerce Commission is being pressed by the U.S.A. railways to approve a substantial increase in charges. Here is a comparison, in millions of dollars, of the operating revenue, operating expenses and net railway operating income, after taking taxes and rents into account, of the Class 1 railways for the six months ended June 30, 1941 to 1946.

Six months to June 30—	Total operating revenue (millions)	Total operating expenses (millions)	Total net railway operating income (millions)
1941	$2,424	$1,678	$434
1942	3,280	2,157	552
1943	4,346	2,630	712
1944	4,636	3,078	552
1945	4,697	3,195	549
1946	3,577	3,085	153

Operating revenue reached a record height in the first half of 1945 and decreased this year by nearly 24 per cent. Expenses also touched a peak in 1945, but were reduced by only 3 per cent. The operating ratio rose from 68 to 86 per cent. and net railway operating income was 72 per cent. lower. No fewer than 41 of the 132 Class 1 railways had a deficit this year, as compared with 9 in 1945. The rate of return on the property investment of the whole of the Class 1 railways is estimated at 1·65 per cent. for the twelve months ended June 30 last; for the previous twelve months the rate of return was 3·95 per cent. and in 1942 it stood at 5·5 per cent. The financial position of the railways has deteriorated alarmingly since the surrender of Germany and the collapse of Japan.

On looking through the results for the individual railways, it is astonishing to see that the Pennsylvania Railroad was $7,710,000 dollars to the bad, whereas it had a margin of $66,000,000 on the right side at the end of June, 1945. Its operating revenue of $377,230,000 was 23 per cent. below the 1945 figure of close on $494,000,000, but it was able to cut expenses by no more than 5 per cent. The eclipse of the greatest of American railways will not last long. During the hundred years of its existence, a dividend always has been paid and its magnificent property possesses great powers of recovery. Its depleted revenue for the first half of this year was still much the largest figure in the list. The New York Central came second with $288,000,000, followed by the Southern Pacific with $237,000,000 and the Santa Fe with $196,000,000. These three railways operate a longer mileage than the Pennsylvania, but do not handle nearly such a huge volume of traffic. They all had a reduced balance on the right side, as had the Union Pacific, but the Baltimore & Ohio had a deficit of over $5,500,000, while the Chicago & North Western just failed to make ends meet by $78,500. The shorter lines in the Pocahontas region—the Chesapeake & Ohio and the Norfolk & Western—appear to be in a good seam.

The comparison between the two half years may be affected in some degree by accounting adjustments connected with wartime expenditure. The general trend, however, is unmistakable and it will be most interesting to see how far the American railways succeed in improving their results before the end of the year. During some recent weeks wagon loadings were high, but September brought a fresh crop of labour troubles involving restrictions on the forwarding of traffic. Even if industry settles down and maintains a high level of production during the closing months of the year, the railways may not be able to build up their net earnings to an adequate extent unless the price of rail transport is advanced. Since 1933, the average charge for carrying a ton of freight for a distance of a mile has been less than one cent, but it can hardly remain on that low basis when wage rates, the cost of social services, and material prices are all rising.

* * * *

Transport Administration in Tropical Dependencies

EVERYONE knows how the building of railways quickly transformed the Mid-West region of the United States from prairie land into one of the busiest industrial regions in the world. The introduction of modern transport facilities has not effected a similar change in tropical dependencies such as the Crown Colonies of the British Empire, but has done a great deal for the economic development of the native peoples. In most cases, Colonial transport services were provided at the expense of the State, principally by means of loans raised in this country. An immediate return on some of the expenditure could not be expected, but commercial considerations were not ignored in the process of opening up new territories, and the various governing bodies kept their transport undertakings under close observation.

Probably too much correspondence passed between the Government secretariats and the executive transport officers, who were also required to prepare annual reports in great detail. To take one example, the report on the Nigerian Railway for the financial year ended March 31, 1938, covered 59 foolscap pages of print and was accompanied by 24 statements and 29 statistical tables. Now the capital cost of the railway was about £21,600,000; its receipts for the year amounted to £2,835,000, and its working expenses to £1,326,000. Making every allowance for the Government's anxiety to keep a tight hold on its property, the mass of information supplied by the general manager was somewhat out of proportion to the extent of the railway's operations. Certainly, the railway stretches across Nigeria for 1,900 miles, but the density of traffic was low—about 177,700 net ton-miles per route-mile, or one-sixth of the density on a busy section of home railway like the Cheshire Lines.

Each tropical dependency has arranged the control or regulation of rail, road, water and air services in its own way. There exist, however, common factors that should be taken into account in settling any scheme of administration, just as regard should be paid to certain principles in planning the development of colonial transport. The position can be elucidated only by an officer with a flair for organisation and an analytical mind, who has had practical experience in the Tropics. We know that Mr. George V. O. Bulkeley possesses these qualifications, and are glad that he has thrown into book form his opinions about "Transport Administration in Tropical Dependencies."* These views were formed during years of strenuous service in Africa as Port Manager, General Manager of Railways, Director of Transport, and Member of Executive Council in the British Colonial Service. We believe the volume to be the first exhaustive study written about the principles underlying the treatment of Colonial transport.

In Mr. Bulkeley's own words, the problem is how to secure for transport that comprehensive review, sifting and analysis which the affairs of a large commercial undertaking receive before an issue is presented for decision to the governing body. If he were left to follow out his own ideas, Mr. Bulkeley would create a post of Commissioner for Transport within the Government secretariat in each dependency. The commissioner would be the medium for dealing with all transport issues in the country, and would be a member of the Executive Council. He would act as Chairman of a Transport Advisory Board, representative of all interests, as well as presiding over a Directive Committee consisting of the Chief Secretary, Financial Secretary, and executive heads of the

* "Transport Administration in Tropical Dependencies." By George V. O. Bulkeley, C.B.E., M.I.Mech.E., in collaboration with Ernest J. Smith F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. *The Railway Gazette*, 33, Tothill Street, Westminster, S.W.1. Price 20s.

transport departments. The Directive Committee would deal with questions of policy, development, finance, purchasing, rates, and staff. These arrangements would, it is thought, curtail correspondence all round, and avoid interference with the day-to-day work of the executive officers. Mr. Bulkeley takes great pains to make out a case for these proposals. Our only doubt is whether his scheme would not be too elaborate for a small dependency, which might be able to make progress by less complicated methods.

Apart from the general question of administration, the book contains useful chapters on the running of the separate forms of transport. Mr. Bulkeley favours a simple organisation for operating Colonial railways, and would keep their management apart from port working. He accepts the principle that "both the land and water areas of a seaport (that is to say, port activity ashore and afloat) should be brought under one management constituted as the Port Authority and directing port operations as a whole." He insists that all waterside structures, including cranes and other handling machinery, should come under the Port Engineer for maintenance. He is strongly in favour of a Port Advisory Board for a shipping centre of any consequence, which would help to frame the port and marine tariffs.

One of the longest chapters in the book sets out the author's views on "Management and Staff," which are stated "with no intention to dogmatise but rather to present lines of thought." Then follow sections treating of finance, accounting, and statistical records. In preparing these chapters, Mr. Bulkeley secured the collaboration of Mr. Ernest J. Smith, formerly Chief Accountant, Nigerian Government Railway. Generally speaking, the practice adopted by the British railways is remodelled to suit the needs of a Colonial railway. Neither do we find any radical departure from our system of regulating road transport, inland waterways, and air services, suggested in the sections assigned to these agencies, though in discussing their development Mr. Bulkeley never loses sight of the Colonial viewpoint.

After a careful perusal of this excellently produced book, we feel sure that it contains much to interest and instruct the existing staff of transport undertakings in tropical countries. It should be helpful also to young men engaged in any type of transport at home who are thinking of embarking upon a new career in one of the Crown Colonies. Mr. Bulkeley is well known as the author of two manuals on "Mechanical Appliances for Handling Railway Traffic" and "Railway and Seaport Freight Movement." As we have indicated, his latest volume is of wider scope. The questions discussed in its pages will become more important as developments in the tropics extend, and its appearance at this time is therefore opportune.

* * * *

Long Welded Rails

FROM the very early days of railways, engineers have recognised the weak feature in track construction presented by the rail joint. The famous patent of 1820 granted to John Birkinshaw for improvements in rolling wrought-iron rails said "the respective rails may be made of considerable length (18 ft. I should recommend), by which the inconvenience of numerous joints is reduced; and, consequently, the shocks or jolts to which the carriages are subject from passing over the joints (very much to the injury of the machinery) are also diminished. And in order still further to remedy the evil arising from the joints of the railroad, I propose to weld the ends of the bars together as they are laid down, so as to form a considerable length of iron rail in one piece." In practice, these rails were formed generally in lengths of 12 ft. to 15 ft., and were sub-divided into bearing lengths of 3 ft. each, by the fish-bellied underside. Similarly in the U.S.A., the joint problem arose very early, and in 1827 John B. Jervis, the Chief Engineer of the Delaware & Hudson Railroad, selected rolled iron instead of cast iron because "rolled iron will have the advantage of few joints."

So far as we are aware, the inadequacy of welding technique prevented any extensive use being made of this proposal, and rail lengths in the track were the lengths into which the rails were rolled. Beginning in 1835, the fish-bellied rail began to give way to the parallel rail introduced by Edward Steel, Engineer of the Clarence Railway, but rail ends continued to meet in a joint chair until the introduction of fishplates and the suspended joint under a patent secured by William Bridges Adams and Robert Richardson in May, 1847—exactly 100 years ago.

The disadvantages of the fishplated joint are well known. The break in the continuity of the rail is the cause of much additional work in connection with the maintenance and tightening of bolts and plates, the frequent packing of the joint sleepers, and the considerable attention that has to be given to battered rail ends. Indeed, it may be said that a large proportion of ordinary track maintenance expenditure is attributable directly to this type of joint, which, because of its mechanical shortcomings, is responsible for noise and the transmission of shock, with corresponding harmful effects upon rolling stock.

Just over 50 years ago, the opportunity afforded by improvements in welding technique enabled the "modern" period of rail welding to be inaugurated. The first efforts to secure a continuous metallic joint were made by electric welding, and it was found even then that the question of expansion and contraction of the rails due to changes of temperature were accommodated within the rail itself in the forms of compression or tension. Exactly 50 years ago (in January, 1897) Mr. W. K. Bowen, Superintendent of the Chicago City Railway, stated that, of the 17,000 welded joints made on his line in 1895, only 154 proved defective, and these breakages were due to flaws in the metal. Even then, for many years, the welding of rail joints was confined almost exclusively to street tramway practice, but a few Thermit-welded joints were installed on a suburban line of the Nord Railway near Paris as long ago as 1906. Subsequently, various overseas railways installed some thousands of Thermit-welded rail joints, but it was not until early in 1934 that the first conductor rail and running rail Thermit-welded joints were introduced on railways in this country.

The application of flash-butt welding to rail joints was introduced by the German State Railway about 1928, and the process has been developed since, and its use extended to many railways on the Continent and also in this country. It is now standard practice on the London Transport railways where the 95-lb. bull-head rails are flash-butt welded in the depot into 300-ft. lengths. The conductor rails are laid in 120-ft. welded lengths, and are site-welded into lengths not exceeding ¼ mile. Rail welding is still not practised extensively on the British main-line railways, although the 39-ft. American rails imported in 1941 and 1942 against emergencies, and subsequently released for use, have been welded in pairs and laid as 78-ft. rails, and a few are in 117-ft. lengths, composed of three sections welded.

The end-to-end welding of rails up to five or more rail lengths is standard practice in New South Wales and Victoria, and is being adopted elsewhere. Until recently, the New South Wales rails, like those in Victoria, consisted of five 45-ft. rails joined by flash-butt welding, and thus 225 ft. long. The N.S.W. length has now been extended to eight rails, making the total 360 ft. In modern U.S.A. practice, the first continuous rail was laid through a tunnel by the Central of Georgia Railroad in 1930, and at present some 17 railways have installed varying amounts of welded track, up to a total of 42 miles on one line. The lengths range from a few hundred feet up to 7,000 ft., which is the longest single piece now in use in open track. Despite seasonal temperature variations of 100° F. (which should lengthen an unrestricted 1-mile section of steel rail by about 41 in.) no expansion or contraction difficulties have been experienced. Nevertheless, the total of welded rail throughout the U.S.A. is estimated at about 100 miles, which is a negligible percentage of the track mileage of the country, and, moreover, about 33 miles of this is in special installations over bridges and river crossings, through tunnels and stations, and in city streets. The remainder is open track. It is clear, therefore, that reactions to the possibilities of the welded rails have been as conservative in the U.S.A. as in our own country, despite the fact that many persons have been misled by the prominence given to particular installations into thinking that the use of welded rails in the U.S.A. has become extensive.

Comprehensive details (to which we hope to refer again at greater length) have been supplied to us recently by the Delaware & Hudson Railroad, which pioneered continuously-welded rail in long lengths in open track as long ago as 1933. These details clearly support the engineering practicability and indicate that the problem is primarily economic. Comparative

maintenance labour costs between continuously-welded rail and fishplated rail show savings in lining and surfacing ranging from 31 to 46 per cent., and in gauging of from 33 to 95 per cent. In the U.S.A., as elsewhere, permanent way engineers are pessimistic about the future of track labour, both as to quantity and quality. The view of the Delaware & Hudson Railroad is that wages will be considerably higher now and efficiency noticeably lower. The use of mechanical equipment and tools is conserving many man-hours, and will continue to do so, and it is possible that long welded rails will make an important contribution to the desired reduction of maintenance costs.

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Queensland Railways

PROBLEMS impeding the restoration of train services to pre-war standards are similar in most countries, and neither State-owned nor company-worked lines possess the key to overcoming them with the rapidity desired by the public. In his report on the working of the Queensland Railways in the year ended June 30, 1946, the Commissioner, Mr. P. R. T. Wills, emphasises the universality of these problems by quoting several passages from the recent L.M.S.R. publication, "The L.M.S. Answers Your Questions," observing that all the questions selected might well be asked of the Queensland Railways, and that the answers would be practically the same as those furnished by the L.M.S.R. Demands for modernisation of railway facilities are as familiar in Queensland as elsewhere, and most of them ask for such costly measures as immediate suburban electrification, air-conditioning of all passenger trains, and speed increases that would entail extensive improvements and realignment of the permanent way. At the present time, however, the railways find it quite impossible to obtain qualified personnel to handle essential work of rehabilitation.

Much criticism of the speed of trains in Queensland seems to assume a much higher rate of travel in other States of Australia. The Commissioner quotes various instances in which the speed of Queensland passenger and goods services compares favourably with those elsewhere, and points out that although the average of 24·3 m.p.h. for the mail train from Roma Street, Brisbane, to Townsville presents an unfavourable comparison with the 28·9 m.p.h. of the express from Brisbane to Sydney, the timings of the Townsville service are governed by considerations such as a convenient hour of arrival, and the possibility of passengers enjoying the scenic route between Townsville and Cairns in daylight instead of travelling at night. Taking an average of 25 goods trains in Queensland, it is shown that their average speed of 14·8 m.p.h. is some 2 m.p.h. higher than those of corresponding services in Victoria and New South Wales, and compares with an average of 15 m.p.h. for goods trains in 1945 on the Canadian Pacific Railway and all Class 1 American railways. The merits of the Queensland figure should be considered in the light of the fact that only 2 per cent. of the system is double track.

Gross earnings for the year ended June 30, 1946, were £11,430,908, a decrease of £1,749,709. Working expenses, at £10,104,262, represented 88·39 per cent. of earnings, as compared with 85·40 per cent. in 1944-45. After payment of interest on capital, the final result for the year was a deficit of £158,935, comparing with a surplus of £337,897 in the previous year. Although the number of passenger journeys, at 37,704,078, showed a reduction of 830,240, it was the second highest on record, having been exceeded only in 1944-45. Passenger journeys, both country and suburban, are still much in excess of pre-war levels. A comparison with the last pre-war year, 1938-39, shows that passenger earnings in the period under review increased by 120·97 per cent., notwithstanding the fact that rates and fares are lower now than before the war. Working results for the past four years are shown in the table below:—

	Passenger journeys	Goods tonnage	Earnings	Working expenses	Net earnings	Ratio of expenses to earnings
			£	£	£	per cent.
1942–43 ...	32,869,263	6,231,801	17,148,196	10,993,842	6,154,354	64·11
1943–44 ...	37,641,152	5,997,811	15,659,891	12,719,237	2,940,654	81·22
1944–45 ...	38,534,318	5,798,476	13,225,617	11,295,230	1,930,387	85·40
1945–46 ...	37,704,078	5,382,282	11,430,908	10,104,262	1,326,646	88·39

Extensive plans are being prepared for modernising and improving the railways. Designs are in the course of production for an air-conditioned train with sleeping and restaurant car accommodation, and continuous buffet service, to run between Brisbane and Cairns. In addition, nearly 400 coaches for suburban and long-distance traffic will be constructed. Bridges on the South Coast line will be rebuilt to enable fast passenger locomotives to haul modern types of passenger stock to serve the seaside resorts in that area. Further strengthening of bridges will take place on the lines west of Roma Street, Brisbane, to permit the use of heavier locomotives. Construction of locomotives at the Ipswich Workshops is being resumed, and six tank engines, to haul 8-coach trains as against the 7-coach formations handled by existing suburban classes, are being built there. Contracts were placed during the year with outside firms for the construction of 26 "C17" class locomotives.

* * * *

Restoring the Signalling in the Netherlands

THE Signal Engineer of the Netherlands Railways, Mr. J. H. Verstegen, recently gave a lecture to the Transport Section of the Dutch Royal Institute of Engineers on the work of restoring the signalling on these lines after the liberation, and outlined at the same time a number of proposals for modifying the Netherlands signal system and bringing it into line with modern tendencies and requirements. When the Germans left the country, it was found that the equipment at about 80 stations and blockposts—including 13 large stations—had been totally destroyed or very badly damaged, while 420 other installations had been damaged to some degree, making about 80 per cent. of the whole.

The first step was to try and get such equipment as remained at all into something like working order, and to erect a few signals to serve as a protection to stations. A temporary "draw ahead" home signal aspect was introduced to cover conditions where interlocking could not be got working. It was decided not to attempt more than a provisional restoration at certain large stations, pending a complete investigation of future policy. Fortunately, owing to a number of their stations having been re-signalled of recent years, the Swedish State Railways had a good deal of spare equipment of earlier design which was readily adaptable to the conditions in Holland. A number of power frames was accordingly obtained from Sweden, and proved a great help in restoring the working.

A few figures will give some idea of the situation in the worst cases. At Eindhoven, for example, three power frames of 72, 40 and 80 levers, and a mechanical frame of 63 levers, were destroyed, together with the block apparatus—somewhat elaborate under the Netherlands methods of working—and the telephone exchange. The damage, at 1939 prices, was estimated at 200,000 fl. Here Swedish equipment is being used to obtain some facilities, while other apparatus is being made in Holland. At Roermond two power frames of 112 and 120 levers, and 90 electric point machines, were destroyed. At Arnhem four mechanical boxes disappeared. At 's-Hertogenbosch everything had gone, and it is interesting to note that it is proposed to apply the "entrance and exit" panel system at this place. In some cases, as at Utrecht, where new power signalling was being provided, the attempt to take the equipment away failed, and it was found and brought back. Generally speaking, the automatic signalling sections suffered the least and could be fairly quickly restored.

Mr. Verstegen considers that the need for rebuilding so many installations makes it advisable to investigate whether some changes in principle ought not to be adopted in Dutch signalling, particularly in the introduction of multiple-aspect signals in place of the home and distant system; the adoption of independent shunting signals; and the introduction of the developments now seen in several other countries in the field of relay interlocking and automatic train control. He has worked out a proposed scheme of signal aspects, and it is intended, apparently, to make some trials on the lines he suggests. The position now obtaining in Holland is something like that in Belgium after the 1914 war. The Germans had either destroyed or altered so much of the signalling that the opportunity was taken to introduce the multiple-aspect principle, but using mechanical equipment. Once again, too, the invader has lost irrevocably the market he once had almost undisputed for products of this class.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Fifty Years of Rail Transport

London, N.13. February 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I would like to encroach on your valuable space to answer briefly the correspondents in connection with the above. The Traffic Apprentice scheme does show promise to the "ranker," but, unfortunately, not the right kind of "ranker," and I am thinking of the traffic man, he who does the actual job without being examined and tutored.

It might interest "Veteran Apprentice" that some of my time was spent in a signal box and other positions in the operating grades. I have also—in my own time—watched large relaying operations.

He suggests I need not be alarmed and states that Traffic Apprentices deserve all the promotion that comes their way, but what of the signalman, guard, shunter, foreman inspector, controller; these men teach apprentices. Why not dispense with the teaching and promote men from these grades who show outstanding ability to positions which are occupied by traffic apprentices? After all, we cannot all commence our railway careers as clerks and enter the traffic apprentice examinations to secure quick promotion.

To "Green Ginger" I say, he and his colleagues have every right to be proud of a man who has risen from the ranks to superintendent. Assuming Mr. Sayers was a junior clerk, I have yet to hear, since the introduction of the Traffic Apprentice scheme, of a lad porter becoming a superintendent, but why not?

To "Yorkist"—I am thinking of the days of the Great Northern Railway. Since amalgamation, "look what's happened."

Yours faithfully,

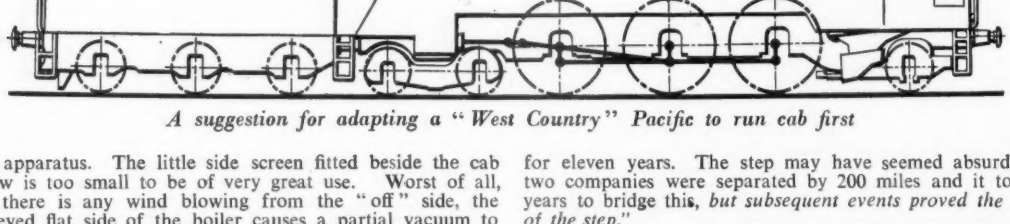
H. HILL

Front-Cab Proposal for "West Country" Pacifics

64, Martyrs' Field Road,
Canterbury. January 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have had recently several conversations with the men who handle the Southern Railway "West Country" class locomotives on the Ramsgate—London runs. When I have asked them what they thought of these engines, the reply has always been the same; that they are excellent machines, but they have one big drawback from the driver's point of view. The visibility from the cab is poor. The large boiler, by itself, greatly restricts the view forward from the driving position, and even this view is obstructed by the position of the brake apparatus. The little side screen fitted beside the cab window is too small to be of very great use. Worst of all, when there is any wind blowing from the "off" side, the unrelieved flat side of the boiler causes a partial vacuum to form, into which the steam and smoke from the chimney are drawn, and the view ahead is reduced to nothing at all.



A suggestion for adapting a "West Country" Pacific to run cab first

It has been announced that a number of these engines is to be converted to burn oil. When a locomotive burns oil, the duties of the fireman are to control the fuel supply by means of valves, and not with a shovel. Thus, there is no necessity for the fuel supply to be near to the fireman on an oil burner, so long as he can reach the necessary valves easily, and at the same time be able to observe the smoke from the chimney. This fact has been realised by the Southern Pacific Railroad, of the U.S.A., and a number of locomotives has been built by that company in which the tender is connected to the engine at the smokebox end. One such was illustrated in *The Railway Gazette* for September 6, 1946, at page 271.

I should like to suggest, therefore, that when the "West Country" Pacifics are fitted for oil burning, the experiment should be carried out of turning the engine about, and fitting it to run as a "cab-in-fronter." In this manner there would be no possible danger of smoke obstructing the driver's view, since the source of smoke would always be behind him, and as also he would have no large boiler to obstruct his view, the outlook from the cab would be as good as that from the motor coach cab of an electric train. I enclose a sketch to show how this modification would look. In making the sketch I have made as few alterations to the external appearance of engine and tender as possible, the main alteration being the fitting of a totally-enclosed cab, with door. The tender cab also is removed. Apart from that, the drawing is entirely copied from the diagram in the July 20, 1945, issue of *The Railway Gazette*.

Actual practice, however, probably would require further modifications to be made in the external appearance. It would be necessary, probably, to re-arrange the controls in the cab, which, in turn, might require a larger cab, and the use of a four-wheel bogie under it instead of the two-wheel truck (making the wheel arrangement 4-6-4). Alterations, also, probably would be called for in the external shape of the smokebox end of the engine, and might include a shroud to carry the streamlining effect across the gap between engine and tender. Alternatively, a new design of tender might be called for.

Several objections can be raised to this idea. That of its unconventional appearance can be dismissed straight away, since practically every new type of engine has been called unconventional until people have got used to it. In any case, it would look no more strange than a Garratt type, and these are quite accepted things nowadays. One big objection is that, in the event of the engine having to work in reverse, the lookout would be practically nil. However, as it is so very seldom that a main-line engine is required to run far in reverse, I feel that the great advantages of this arrangement far outweigh this disadvantage. I think that an experiment on these lines would be very interesting, and I throw out the suggestion "to whom it may concern." Whatever the other results, it certainly would solve the smoke problem much more effectively than any method yet tried on a British steam locomotive.

Yours faithfully,

ARTHUR G. WELLS

Bodmin & Wadebridge Railway Receipts

The Railway Club,
57, Fetter Lane, E.C.4. February 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In "The Story of British Railways," Mr. Barrington Tatford (at page 106) makes the following statement in regard to the purchase by the L. & S.W.R. (in 1847, according to Dendy Marshall) of the Bodmin & Wadebridge Railway:—

"In 1845 an important blow was struck by the acquisition of the Bodmin & Wadebridge line, which had been running for eleven years. The step may have seemed absurd, as the two companies were separated by 200 miles and it took fifty years to bridge this, *but subsequent events proved the wisdom of the step.*"

I question, however, whether the words I have italicised are justified. It is true that the South-Western Chairman at the half-yearly meeting on August 14, 1873, spoke of the Bodmin & Wadebridge as "the company foothold in that part of the country," but the price paid for it was considerable since the purchase price of £35,000 paid in 1847 would accumulate with compound interest at 5 per cent. to no less than £364,045 by the time the L. & S.W.R. effected a junction at Wadebridge on June 1, 1895.

That the purchase was a strategic, and not a commercial investment is clear from the "Return of the Passenger and Goods Traffic on each Railway in Great Britain for the Two Years ending 30th June, 1846, and 30th June, 1847" (Railway Commission Statistical Returns, 1848). From this return we learn that during the half-year from July 1 to December 31,

1845, the line carried 2,236 passengers (for a total mileage of 2,347) at an average inclusive speed of "6 to 7 miles upwards, 8 to 10 downwards," and at fares per mile of "inside 1½d., outside 1d. (returning the same day half-price)." The gross passenger receipts for the six months were £58 15s. 11d. A footnote states "Passenger carriages accompany the traffic trains. If the engine does not work on Thursdays they are taken with horses." Apparently, therefore, the engine was a hundred years ahead of its time in its belief in a 5-day week.

The gross receipts for goods traffic during the same period were £1,023 9s. 9d., the 9s. 9d. plus a further threepenny bit being realised by the carriage of 10 pigs for 10s. In the next half year (January 1 to December 31, 1846) the pig traffic fell to zero, but the passengers rose to 2,319 (with a mileage of 2,562) and the receipts therefrom to £61 9s. 11d. Unfortunately, this encouraging increase of just over 4½ per cent. in passenger receipts was more than counterbalanced by a drop in goods receipts (including 10s. on pigs) of £35 15s. 2d.

Consolidating the next two half years (both pig-less) the gross receipts from July, 1846, to June 30, 1847, were:—

	£	s.	d.
Passengers	119	19	4
Goods	2,585	11	6
	£2,705	10	10

a marked improvement, it must be admitted, on the total of £2,131 10s. 2d. for the two previous half years.

Yours faithfully,

KENNETH BROWN

The Lines of Communication, Assam

The British & Chinese Corporation Limited
27, Chung Shan Road (Eastern 1),
Shanghai. January 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—None of us who worked on the Bengal Assam Railway during the late war could wish to decry the part played by the Construction Department of the Bengal Assam Railway in the development of the Assam lines of communication, to which Mr. H. M. Read drew attention in his letter published in your issue of August 23, 1946. Mr. Read's letter, however, implied that the broad-gauge doubling was under the control of the Assistant Director of Transportation, Assam, which was not the case.

Practically the entire work of doubling the broad-gauge from Abdulpur to Santahar, and the many alterations between Santahar and Parbatipur, were carried out by Transportation troops, working under the Executive Engineer, Santahar, who was responsible to an Engineer-in-Chief of the Construction Department of the Bengal Assam Railway. The military unit most consistently and intimately associated with the broad-gauge doubling was 189 Indian Railway Maintenance Company, I.E. During most of the work, the officer commanding that company officiated concurrently as Executive Engineer, Santahar.

Yours faithfully,

A. O. WHITEHOUSE

What are the Spayson Railways?

London, S.W.1. February 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In Major-General Sir F. J. Goldsmid's well-known book "James Outram: A Biography," of which the second edition was published as long ago as 1881, there is a cryptic footnote in the following terms:—"See notes by George Stephenson, in reference to the 'Spayson Railways,' Smiles's *Life of George Stephenson*, p. 59." It is well known that there are many editions of Smiles's work, and that these differ substantially in many respects, as Smiles learned a great deal after the publication of his original work, and modified his text accordingly, by eliminating errors of which he was convinced, and adding new material.

Howbeit, I have never succeeded in tracing any edition in which there is any reference to these mysterious Spayson Railways. Through the courtesy of the Secretary of the Institution of Civil Engineers, I was able to consult the copies available in the library of that Institution, including the first edition, but none reveals the answer to this query.

Could any of your readers say what were the Spayson Railways; which edition of Smiles made the reference; and where can the text of this reference be consulted?

Yours faithfully,

CHARLES E. LEE

Publications Received

Mold's Ratios. Shipley: J. Parkinson & Son. 8¾ in. × 5½ in. 64 pp. Price 10s. 6d.—A revised edition has been published of the gear ratio tables compiled by Mr. Charles Mold, which made their first appearance in 1922. In the new book the figures have been extended to five places of decimals. The tables show the gears for obtaining 5,539 ratios from 0·4 to 2·5 : 1. The figures were intended primarily for simplifying the calculations required when cutting spiral gears on Sunderland gear planers, but they are equally applicable to any case in which it is required to know the correct gears for a given ratio.

Principles of Direct Current Electric Traction. By Douglas E. Ingham. London: George Newnes Limited, Tower House, Southampton Street, Strand, W.C.2. 8¾ in. × 5¾ in. 248 pp. Illustrated. Price 15s. net.—The author of this book has struck a balance between the theoretical and practical aspects of his subject, which results in its providing a convenient source of reference on electric traction practice for engineers and students. Motor principles are dealt with briefly in the opening chapters, after which methods of mounting and power transmission are described. The question of control is discussed at length, with the aid of simplified diagrams to clarify the basic principles of manual and automatic contactor operation. The book deals with tramway and trolleybus systems in addition to railways, and is copiously illustrated with examples of modern practice in motor, switchgear, and vehicle design. Diesel-electric traction and the Metadyne system of control are dealt with in separate chapters. A minimum of mathematical treatment probably will be considered an advantage rather than a drawback by many readers who desire a rapid answer to their electric traction queries.

Transactions of the Scottish Engineering Students' Association, Session 1945-46. Published by the Scottish Engineering Students' Association, "Snowdon," Lilybank, Port Glasgow.—These are the first published transactions of the Association and include the presidential address of its Honorary President, Sir Harold E. Yarrow, C.B.E., Chairman of Yarrow & Co. Ltd. Mr. J. L. Adam, C.B.E., contributes a foreword. During the 1945-46 session four members read papers, reprinted herein, before the Association, and various works and other visits of engineering interest were made.

Mechanics of the Metal Cutting Process. II. Plasticity Conditions in Orthogonal Cutting. By M. Eugene Merchant. 1945. American Institute of Physics. 10½ in. × 7¼ in. 7 pp. Reprinted from the *Journal of Applied Physics*, 1945, Vol. 16, No. 6, pp. 318-324.—This is a companion to a previous paper by the same author, who uses similar technique, giving first the mathematical theory and next the experimental methods. The basic condition is that the shear stress on the plane of shear shall be equal to the shear strength of the metal. It is assumed also that the shear strength is a constant for a given material and is the only quantity controlling its plastic behaviour. A linear curve is obtained, relating the shear strength and compressive stress of the material, the slope of which is a constant (k) for a given material. If k and the shear strength are known, all the forces involved in cutting a given material can be calculated from the actual chip geometry, without using a tool dynamometer—an important point in the analysis of practical machining operations.

Dunlop in War and Peace. By Sir Ronald Storrs, K.C.M.G., C.B.E. London, Hutchinson & Co. (Publishers) Ltd. 8½ in × 5½ in. 147 pp. with 51 illustrations. Price 8s. 6d.—The second world war, both on land and in the air, was fought on wheels, and speed counted far more than static strengths. It was rubber alone that made possible the mechanisation of the armies and the air forces. When war came, the Dunlop organisation was suddenly called on to turn its energies and ingenuities from the purposes of peace to those of war, and the story of this amazing transformation and all that it represented in the war effort is told vividly in these pages. First, the author traces the history of Dunlop from its earliest days at home and abroad, which is itself a most stimulating tale of industrial enterprise, and he then describes the great changes that had to be made to meet the ever increasing demands for every kind of war service. Dunlop invented and produced at the shortest notice every kind of device, including many in which rubber was not the basic material, and these strange inventions are described in detail. In the latter part of the book, we leave war behind us, and read instead of the plans the Dunlop concern is making to meet the future needs of industry. The whole picture, graphically portrayed, makes the book an absorbing one, and presents a splendid and encouraging outlook for the future.

The Scrap Heap

Perfectly Clear

An engineer is said to be a man who knows a great deal about a very little, and who goes along knowing more and more about less and less, until finally he knows practically everything about nothing: whereas a salesman, on the other hand, is a man who knows a very little about a great deal, and keeps knowing less and less about more and more, until he knows practically nothing about everything.

* * *

Stand Easy

An odd example of word-making may be observed inside all the corporation buses at Lancaster. A notice discussing the question of standing in the buses ends with the stern warning that "In no circumstances must the permitted number of standees exceed five." If that jabberwocky word has any meaning at all it can refer only to people who are stood or perhaps trodden on, and it is difficult to think of the proud descendants of old John o' Gaunt's sturdy liegemen allowing themselves to be placed in so humiliating a situation—even by the corporation. If they will stand that, they will stand anything.—*From "The Manchester Guardian."*

* * *

4,140 More Civil Servants

A further increase in the number of Civil Servants is shown in a White Paper which relates to numbers employed on October 1, 1946, and records an increase of 4,140 over the total on July 1, 1946, making a grand total of 713,589. The numbers employed in the three service departments fell by 8,241, which brought the reductions made since July, 1945, to nearly 40,000, or more than 25 per cent. of the strength at that time. Reductions at the Ministry of Supply in the quarter were 1,339. But in the over-all picture these contractions were cancelled by a jump of 11,735 in the Revenue Departments. The Post Office claimed 8,522 of this total and now has a staff of 254,191. There was a decrease of 4,586 at the Ministry of Food. There was a further increase of 1,229 at the Ministry of Works caused by the need to maintain building controls and by other housing work. The Ministry's staff now numbers 20,289. The Ministry of Civil Aviation's staff rose by 720 to 2,868.

* * *

Transport Invention of 1685

An extract from the diary of John Evelyn, dated October 28, 1685, reads as follows:—

"Sir Richard Bulkeley described to us a model of a chariot which he had invented and which it was not possible to overthrow in whatever uneven way it was drawn, giving us a wonderful relation of what it had performed in that kind for ease, expedition and safety. There were some inconveniences yet to be remedied—it would not contain more than one person; was ready to take fire every ten miles and, being placed and playing on no fewer than ten rollers, it made a most prodigious noise, almost intolerable. A remedy was to be sought for these inconveniences."

What was it Sir Richard had invented in 1685? The first tank? Why on fire every ten miles: was it the friction of the rollers? We shall never know.

* * *

100 YEARS AGO

From The Railway Times, *February* 13, 1847

RAILWAY SPRINGS.—JOHNSON, CAMMELL, and Co., Cyclops Works, Sheffield, Manufacturers of Steel throughout every process; Railway Springs of every description, also Improved Cast Steel Engineering Files of superior quality.

J., C. and Co. invite inspection of their process of Manufactures, being assured the Improvements they have adopted in every branch will merit the confidence of consumers.

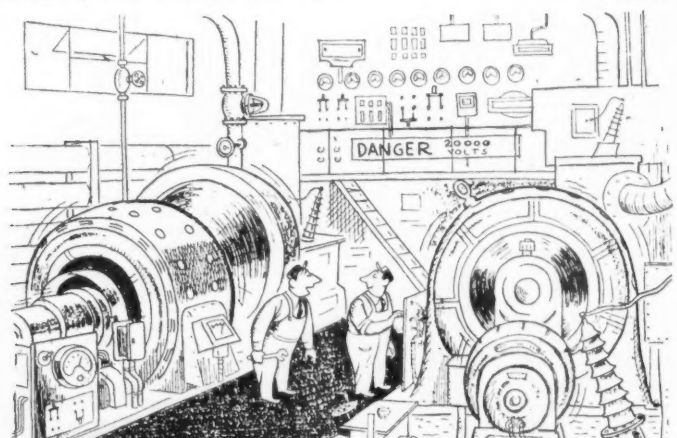
VIADUCTS and other Railway Work.—The attention of Railway Engineers, Architects, and Contractors is particularly directed to the great advantages to be derived from the application of SEYSSEL ASPHALTE, as the *only impervious and permanent* Covering for Arches and Roofs, and Lining of Reservoirs, Gutters, &c.

The arrangements of Claridge's Patent Asphalte Company enable it to execute Works of any extent with the greatest promptitude.

In order to guard against the use of spurious materials, it is important that all applications for Works to be executed be made direct to this Company; and, as a further protection, it is suggested that Engineers, Architects, and Contractors should require a CERTIFICATE from the Company that the proper description of material has been used.

Information may be obtained as to all Works which have been executed by the Company since its establishment in 1838, which will prove that the failure of many Works represented to have been done with the genuine material has resulted from the substitution of a spurious one.

I. FARRELL, Sec.
Seyssel Asphalte Company,
Stanrate, London.



"How about cutting it off for twenty minutes and popping over for a coffee?"

[Reproduced by permission o the proprietors of "Punch"

The Four Jolly Sailors

Four sailors who regard the L.N.E.R. warmly are a quartette who were on Marylebone Station awaiting the mail train on New Year's Day. Their gloom turned to glee when they heard the dance band, and saw the refreshments provided for the Refreshment Room Services' (London District) staff party. Although they had no invitations, they joined the 250 people who filled the dining and tea rooms, their uniforms and smiling faces providing the necessary "pass," and they say they haven't had better refreshment room service anywhere!

* * *

Enthusiast's 500,000 Miles on a 13-Mile Branch

Mr. Leonard King-Williamson, who died in Blackburn on January 19 at the age of 83, was an ardent railway enthusiast all his life, and when only 12 was able to drive engines on to the turntable at Chatburn to turn them for their next journey. On October 1, 1880, he took out the first season ticket between Chatburn and Blackburn, and his daily journeys over the line to and from his office in Blackburn, extending over 58 years, totalled some 500,000 miles. A keen observer of traffic on the branch, he arranged for the pulling off of a signal near his house to work an indicator that showed him a train was coming, and passing drivers greeted him with a friendly "toot" on the whistle. Mr. King-Williamson was made an honorary member of the Engine Drivers' & Firemen's Friendly Society.

* * *

"Language No Human Being Can Understand"

The wording of orders and regulations in "language which no human being can understand," were the subject of comment recently by Lord Goddard, Lord Chief Justice, in the King's Bench Division.

"I am not prepared ever to support orders and find people guilty of criminal offences," he said, "when the orders are couched in language open to all sorts of meanings and cause all sorts of difficulties so that unfortunate people cannot know whether they are acting legally or not unless they take counsel's opinion or, at any rate, get a solicitor's advice."

Lord Goddard was dealing with a case under the Eggs (Control and Prices) (Great Britain) Order, 1944, as amended by statutory rule and order 645/1945, concerning a sale of eggs for hatching by a man controlling 25 or fewer head of poultry.

"These orders have got to be understood by cottagers and miners who keep backyard hens." Lord Goddard added: "The orders may be drafted by professors from universities, but they ought to use language other people can understand.

"This seems to be an order which provides argument for the junior counsel to the Treasury and another counsel, and which certainly is not clear to the two judges of the High Court sitting to consider it. Yet it is an order creating criminal offences.

"If orders are made creating criminal offences, they should be stated in language which humble people like cottagers and miners, who may commit the offences, can understand.

"It is a very serious thing to produce orders and so forth, whether under the Defence Regulations or anything else, creating offences when they are couched in language which does not make it clear whether a person is committing an offence or not."—*From the "Evening Standard."*

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Royal Train Rehearsals

In the course of its tour through the Union, the Royal Train and its accompanying pilot train will have to be operated over various routes which are not called upon normally to deal with locomotives of the type required. The administration, therefore, arranged a preliminary test run on these sections with a train conforming in weight and length to the Royal Train. As standard main-line coaches are lighter than the Royal saloons, which are equipped with heavy batteries and generators to supply air-conditioning and communication equipment, wagons loaded with ballast were attached to the test train. Arrangements were made, also, to simulate the conditions of the additional load arising from electric generators coming into operation at a speed of 20 m.p.h. A dynamometer car was included in the test train to establish whether the locomotives selected were capable of handling the Royal and pilot trains in the variable conditions which will be encountered on the tour.

An opportunity was provided by the test to improve watering and coaling facilities, so that stations that normally have to deal only with one engine at a time, and that at long intervals, shall not be overwhelmed by the requirements of two trains, each headed by three engines, arriving in quick succession. Driving technique was studied throughout the test run, and wherever necessary, drivers were instructed in the methods of ensuring the most comfortable handling of the Royal Train on routes with frequent changes of gradient and much curvature.

INDIA

Central Station for Agra

Agra, which at present has five railway stations—City, Fort, Idgah, Cantonment, and Raja-ki-Mandi—in time to come will have a single central station. This decision was reached at a post-war project meeting held at the Collector's house, and presided over by Mr. Jagan Prasad Rayat, Parliamentary Secretary.

N.W.R. Cleaner Stations Campaign

As part of a campaign to promote cleaner and tidier stations, the North Western Railway has inaugurated a competition scheme. The three largest stations of the railway—Lahore, Delhi Main, and Amritsar—will compete for a challenge shield, which will be presented to the winner for exhibition in the station building. The remaining stations will be divided into three classes, according to size, and money prizes of £11 5s., £7 10s., and £3 15s. will be distributed among the staff responsible for cleanliness at all the stations of the winning groups.

Reducing Communal Differences

In an attempt to minimise emphasis on communal differences, an experiment is being made in the elimination of communal adjectives in printed and written notices and in verbal announcements on Indian railway stations. "Orthodox" and "Unorthodox," instead of the usual "Hindu" and "Mussulman," are to be used as adjectives in the advertising of food and drink. It appears that "Orthodox" will denote "Orthodox Hindu," whilst "Unorthodox" will mean that refreshment is offered for sale to all other classes. A beginning has been made already on this experiment, though it is as yet too early to judge how the public is reacting to the change.

BURMA

Bridge Reconstruction Progress

On December 23, 1946, the reconstructed Myitnge Bridge on the main line to Mandalay was opened to traffic. As recorded in *The Railway Gazette* of January 3, a temporary bridge had been in use since February 20 last year, in order to permit the restoration of a service between Rangoon and Mandalay. Work is proceeding, also, on the construction of a new bridge at Kyaukse, and plant and surplus stores from the Myitnge undertaking are being used in this project. The new Kyaukse Bridge will have one 150-ft. main span, and two 40-ft. approach spans, requiring fewer piers than the former structure, and so presenting less obstruction to the fast flowing stream.

Train Service Improvements

A train service is now operating eastwards of the Sittang River, in conjunction with a ferry across the Bilin River, worked by a contractor. On the Rangoon—Prome line, one goods train in each direction is now running as a mixed train. There have been additions to the local services between Insein, Thingangyun, and Rangoon.

CHINA

New Railways for Fukien

A company has been formed to build two railways in the Province of Fukien, which at present is without through rail communications with the rest of the country. One line will connect the coastal towns of Amoy and Foochow; the other will run from Foochow to Kweichi, on the main line from Hangchow to Chuchow in the Province of Kiangsi. The total cost of building the two lines is estimated at $50,000,000, of which $35,000,000 will be furnished by a loan from a Canadian corporation.

Lanchow to Kwangchow Railway

The Ministry of Communications has announced a plan for constructing a railway, 1,800 miles long, between Lanchow, capital of Kansu Province in north-west China, and Kwangchow, on the south-west China coast. The section between Lanchow and Tienshui, where connection will be made with the Lunghai Railway to the east coast, is under construction already. South of Tienshui, the new line will run through Kwangyuan, and Kweiyang to Liuchow, on the main line from Hengchow. Traffic between Hengchow and Liuchow had been interrupted by war damage, but repairs to the Kweilin—Liuchow section were completed recently, and traffic over this portion of the line was resumed on January 20. A map of the railways of China, showing the new grouping system, was published in *The Railway Gazette* of September 13, 1946.

Work Begins on the Rimutaka Tunnel

Mr. R. Semple, New Zealand Minister of Railways, drilling the rock preparatory to firing the first charge for driving the tunnel

NEW ZEALAND

Rimutaka Deviation and Tunnel

Work is now in progress on the Rimutaka Tunnel and deviation on the Wellington to Masterton line. The end, therefore, is in sight of operation on the Rimutaka Incline, which is the only example in the world of the Fell system of mountain traction on a steam-operated railway. The 3 miles 7 ch. of the incline have a gradient of 1 in 15, steepening in parts to 1 in 14. It abounds in 5-ch. radius curves, and the longest section of straight track, known as the "long straight," is less than 440 yd. long.

During the 70 years that the incline has been in use, there has been only one fatal accident. This occurred on September 11, 1880, when a gale hurled a train from the line, and three passengers were killed. The first shot in the new tunnel and deviation was fired by the Minister of Railways, Mr. R. Semple, on November 16 last year. Speaking at the inaugural ceremony, Mr. Semple said that ten routes

through the mountain had been surveyed and examined before the final selection was made. Geologists reported that the route selected was 100 per cent. suitable for tunnelling. Electric locomotives for use on the new deviation have been ordered already in England. Some further details of the work were given in *The Railway Gazette* of December 20 and October 4, 1946.

CANADA

Freight Locomotive Conversion

Successful results have attended the conversion by the C.P.R. Mechanical Department of a 2-8-0 locomotive of the "N2" class, built some 35 years ago. The engine, now No. 5200, has been rebuilt as a 2-8-2, with a longer tender, a new boiler, and a mechanical stoker. This makes the conversion practically identical in appearance with the latest engines of the "P1" class, which superseded the "N2" class as a heavy freight locomotive for main-line service. The performance of No. 5200 so far has been better than the "P1" series, helped by the fact that in the 1920s all the "N2" class was given new frames, cylinders, motion, and superheaters.

At the beginning of the recent war, the "N2" engines were destined for relegation to shunting service, but they had to be kept on the road to move war traffic. In their converted form they are giving service when shortage of materials and soaring costs make new building out of the question in the volume required. Engine No. 5200 was turned out of Angus Shops on October 4 last year, and 14 additional engines, similarly rebuilt, are to be delivered in the next seven or eight months. The principal differences between the rebuilt engines and "P1" class locomotives are: boiler pressure increased from 190 lb. per sq. in. to 215 lb. per sq. in.; cylinders reduced in diameter from 23 in. to 22 in.; tractive effort increased from 43,400 lb. to 45,000 lb.; weight on drivers reduced from 216,500 lb. to 197,500 lb.

UNITED STATES

Radio Installation at Kansas City

Two-way radio apparatus is in operation in the Kansas City yard of the Union Pacific Railroad. The equipment operates in the 160 Mc/s band, using frequency modulated transmitters. At the fixed station, which is operated by remote control from two points—one of them 4 miles away—the aerial is mounted on top of a 100-foot floodlight tower. The transmitter and receiver are at the foot of the tower, and the transmitter has a range of about 15 miles. Final plans provide for the installation of 50-watt two-way radio units in 16 diesel shunting locomotives. These units are neatly boxed in metal cabinets on the front wall of the cab. The handset for speaking and listening hangs on the rear wall on the fireman's side of the cab. Mr. G. R. Van Eaton, Superintendent of the Union Pacific Telegraph Department, has placed the cost of the installation at $25,000.

B. & O. Aids Coalfield Development

Development of the 730-million ton Gauley coalfield in West Virginia owes much to the measures taken by the Baltimore & Ohio to improve rail facilities in the district. Existing branch lines in the area were built for lumber traffic, and difficulty was experienced at first in handling coal, since wagons could be only half-loaded because of the light permanent way and bridges. The railway therefore has laid heavier rails and has strengthened bridges on about 150 track-miles, enabling wagons to be loaded fully, and heavier locomotives to be used throughout this mountainous district. New and improved terminal facilities have been provided, at a convenient point for marshalling wagons brought in from branches serving the mines. Eight miles of new line have been constructed through difficult country. At present the mines are capable of turning out 320 wagonloads of coal a day, and considerable expansion of traffic is expected.

Six-Car Mobile Power Plants

During the war, the Bureau of Yards & Docks made use of two mobile electric power plants, each mounted on six cars. The first car is a boiler car, followed by a turbine car, a switchgear car, a transformer car, and two cars housing miscellaneous equipment. It has now been found that these trains can be very useful in peacetime. One of them is at present near Phœnix, in Arizona, where severe droughts have crippled the hydro-electric power installations. The second train, usually stabled at Philadelphia, is being sent to Green Cove Springs, Florida, to supply power for a $70,000,000 naval job.

ARGENTINA

Premature Report of Railway Agreement

An inaccurate report was published in Buenos Aires on January 19 to the effect that the British mission had accepted an Argentine offer of ps. 2,000,000,000 for the outright sale of the British-owned railways. It was alleged that steps had been taken by the British Government to avoid a breakdown of negotiations through insistence on a higher figure by the stockholders, and that a meeting of stockholders had agreed that the offer should be accepted. This report was denied emphatically on January 20 by the British Ambassador to Argentina, Sir Reginald Leeper, who declared that he had made no communication to the Argentine Minister of Foreign Affairs on the lines suggested in the newspaper report.

The Argentine Offer Confirmed

Sr. Miguel Miranda, who has been in charge of the railway negotiations, stated on January 21 that the Argentine sub-commission had found that the railways at present were worth less than ps. 1,000,000,000. He, however, had agreed to go up to ps. 2,000,000,000 "for sentimental reasons," but the British mission had declared that it would not, in any circumstances, accept less than ps. 3,000,000,000.

EGYPT

Similla—Tobruk Line Closed

The last train left Similla for Tobruk on January 2. As from January 11, the line between Similla and Capuzzo has been closed for traffic, and the traffic staff withdrawn. The section between Capuzzo and Tobruk, which was staffed and operated by the British military forces, was closed on the return of the last train from Tobruk.

Nile Bridge at Kafr-el-Zayat

The contract for the new railway bridge over the Nile at Kafr-el-Zayat (see *The Railway Gazette* of July 19, 1946) has been given to Dorman Long & Co. Ltd., of Middlesbrough, whose tender was the lowest. Eleven tenders were received, four from British firms, two from Italian, one from Belgian, one from French, and one from Swiss. The tender accepted was for £570,000. The bridge is to take 2½ years to build. It will comprise six fixed and one swing span, and will carry a double railway track and two roadways.

FRANCE

Suburban Transport Developments

A three-year plan for Metro extensions and purchase of rolling stock has been authorised by the Seine Department Council. For the Sceaux suburban line, 37 motor coaches will be acquired, 15 of which are being built already. These coaches will permit the operation of 6-coach instead of 4-coach trains.

New underground work includes the extension of the Metro Gare St. Lazare—Porte de Saint-Ouen line to the Pleyel crossroads at Saint-Denis. This is to be finished before the end of the present year. To finance the work, the department is authorised to borrow fr. 5,125 million in three successive loans. The Council has adopted also plans for the electrification of the Vincennes suburban line.

SWITZERLAND

Doubling the Gotthard Route

The civil engineering programme of the Swiss Federal Railways for 1947 includes doubling the section of the Gotthard route between Melide and Maroggia (2½ miles). As recorded in *The Railway Gazette* of January 10, this is the only single-track section remaining to be dealt with, work being in progress already on widening between Brunnen and Sisikon. On June 18 last year, the widened line between Rivera and Taverne was opened to traffic. This work had taken two years to complete, having entailed the abolition of 16 out of the former 19 level crossings on the section. Between Taverne and Mezzovico, three miles to the north, a mountain stream had to be diverted.

Rolling Stock Changes for 1947

The locomotive and rolling stock programme of the Swiss Federal Railways for 1947 envisages, on the whole, a greater number of withdrawals than additions, so that the number of locomotives, coaches, luggage vans, and wagons will be lower at the end of 1947 than at the end of 1946. The only item to show an increase will be electric locomotives, but motive power as a whole will decrease. The following figures show the position as it will be at the end of the current year, and at the end of 1947, with details as to withdrawals and additions:—

	Total 31.12.46	Withdrawals 1947	Additions 1947	Total 31.12.47
Motive Power				
Electric locomotives	566	—	13	579
Steam locomotives	290	40	—	250
Other locomotives	3	—	—	3
Motor coaches ...	61	2	—	59
Shunters	165	4	3	164
	1,085	46	16	1,055
Coaching Stock ...	3,431	100	38	3,369
Luggage Vans ...	619	15	5	609
Wagons	17,984	400	20	17,604

Orders proposed for 1947 comprise 10 electric "Re 4/4" locomotives for fast trains (see *The Railway Gazette* of November 8), 2 heavy electric shunting locomotives, 20 coaches, 50 wagons, and 2 crane wagons. For these additions, fr. 4,800,000 has been allocated in the budget for 1947. Vehicles now on order will entail a further fr. 11,400,000.

Application of Base-Exchange Water Softeners to Railways*

Water treatment increases availability and eliminates corrosion

PERHAPS the earliest form of water treatment was the use of boiler compounds, the aims of which are to deposit the existing scale in a loose form which can be blown off, and to coat each particle of subsequently generated scale with starchy or gelatinous material, which will prevent its adherence to the boiler and cause its deposition as a slippery mud.

As early as 1912, Mr. F. L. Bassett, reviewing these compounds, pointed out that the boiler was the wrong place to precipitate any solid matter, and that the cost of using such compounds almost invariably exceeded the cost of chemicals for proper treatment of the whole supply.

While boiler compounds involve less capital expense than external treatment, a boiler designed for steam raising cannot be an efficient settling tank; furthermore, heat is unavoidably lost in the water blown off from the boiler. These remarks apply to scale-preventing compounds; there is a class of compound known as anti-primers or anti-foamers, which has an undoubted sphere of usefulness.

The Lime-Soda Process

The lime-soda process of water softening, in which the addition of lime and soda causes the precipitation of the calcium and magnesium in the water, the sludge being removed periodically from the softener, dates back to the early 1900s in its present basic form, when Lassen and Hjort invented the milk-of-lime type of plant. The North Eastern Railway installed its first plant of this type in 1908, at Hartlepool, the Great Western plant at Swindon following in 1910. The main difficulties of the process were: (1) the slow rate of precipitation in the cold, necessitating large tanks to provide for several hours' decantation; (2) in spite of these tanks, after-precipitation occurred in filters and water mains; (3) the disposal of the aqueous sludge.

Milk-of-lime and soda solutions are not easy to handle, and especially difficult to measure; the Patent Office is full of ingenious inventions for the latter purpose. The chief improvements made are: (1) the placing of the measuring and dosing gear at ground level instead of at the top of a tall tank; (2) the electro-chemical dosing gear, depending on electrical impulses from the water meter in the raw water main; (3) an adaptation of the Glenfield & Kennedy water meter to dose chemicals.

Lime-soda plants only give full results when controlled by chemists or engineers, and the system is economically impossible on a 1,000-mile stretch of main line with 30 or more pumping stations and as many lime-soda plants. To know the correct doses of the reagents, the raw water must be analysed, and so must the chemicals if constant supplies are not easily obtainable. Nor does one raw-water analysis suffice. Supplies may be drawn from rivers or ponds, the contents of which vary with the seasons and the rainfall, and sudden storms can change the mineral content of such waters completely.

The final treated water hardnesses (a minimum of 21 parts per million as $CaCO_3$ to 40 parts per million) fall short of the ideal expressed by Sir William Stanier in his 1936 presidential address to this Institution: "It has been proved that unless zero hardness is provided, most of the advantage of water softening is lost." It is fallacious to assume that corrosion is prevented by the small amount of scale formed as a result of the remaining hardness in water treated by lime-soda plants. Mr. Turner has exposed this fallacy, and has stated that, to prevent corrosion, such coatings of scale must be flawless, which is impossible, as otherwise the corrosivity of the feed is concentrated where such covering is incomplete; to prevent corrosion, water must be such that it deposits no scale, and the prevention of corrosion and the prevention of scale formation are inseparable in practice.

Tendency to Prime

Much controversy has arisen on the subject of priming. Mr. Hancock, on the L.M.S.R., has found the tendency to prime has risen with increase in sodium salts in the boiler water, the maximum permissible being 200 grains per gallon; moreover, softening of the feed water invariably resulted in priming. Mr. Topham, on the Buenos Ayres Great Southern Railway, however, found that priming virtually disappeared with the installation of all softeners, and he cited concentrations of 2,550 grains per gallon and, in one extreme case, of 5,320 grains per gallon, without any difficulty from priming. Until recently, water containing no precipitatable mater, and no organic or sludge-forming colloidal matter, did not prime in a locomotive boiler.

Lately, however, priming has been observed on trials between Reading and Redhill, on the Southern Railway, and on a stretch of main line in South Africa. In these cases there was no suspended matter in the boiler, and a research into the cause has been initiated.

In regard to corrosion, Mr. Turner has stressed the fact that, to prevent it, feed water must be treated so that it deposits no scale, and has mentioned that chlorine salts such as sodium chloride are another factor. In land practice it has been found that the presence of oxygen is a further cause of corrosion, and so de-aeration is extensively practised, to reduce the dissolved oxygen in the feed to 0·05 cu. cm. per litre. For locomotive boilers, however, de-aeration is not a simple matter.

Effect of Excess Alkali

One difficulty which faced the author was that, while corrosion of steel was effectively prevented in locomotive boilers by caustic soda, the very addition of this excess alkali had an opposite effect on copper fireboxes. It was, therefore, necessary to find a method of so conditioning a feed water that it would be simultaneously non-corrosive to copper and non-corrosive to steel.

A small boiler was built to operate at 200 lb. per sq. in., and arranged so that it could be fed with water of similar characteristics to those found on the railways then under investigation. After nearly two years, it was found that copper corrosion could be eliminated by the addition of ½ lb. tannin to every thousand gallons of feed water. This was tried in 1933 on a railway having hundreds of copper fireboxes fed with alkaline treated water; complete protection was given, and after 13 years, there is no sign of the serious corrosion originally experienced.

The results were communicated to the L.M.S.R., and after trials in which a lesser proportion of tannin had proved unsuccessful, copper protection was secured and tannin used on all lime-soda softened waters. The addition of tannin also solved difficulties on one section of the Buenos Ayres Great Southern Railway, in which the concentration of sodium chloride was so high as to neutralise the hydrogen film built up by the alkalinity present, with the result that corrosion appeared.

The two main methods of softening used in the past—boiler compounds and lime-soda softeners—did not provide the type of water that most authorities are agreed is necessary to keep boilers free from scale and to control priming and corrosion; and neither method gave fully satisfactory means for eliminating washing-out whilst ensuring clean boilers.

Until 1928, no record can be found of any base exchange softener having been applied to locomotive feed; the process was stated in books to be unsuitable. In that year, however, a base-exchange plant was tried on the Chilian Nitrate Railways, where the water was particularly bad and was unsuitable for treatment by the lime-soda process. The result was so successful that, a year later, every watering station on the line, nine in all, was equipped with a base-exchange plant. An official report published by the railway in 1932 showed a 30 per cent. fuel reduction on the heavy sections of the line, and the general operation of the railway was so improved that the number of locomotives required to cover the service was reduced by 25 per cent.

Just before 1928 the Southern Pacific Railway, U.S.A., had successfully equipped a short section of line with base-exchange plants; later it increased the number of such plants to 90. The results were remarkable. Prior to treatment, tubes were changed after 90,000 miles; after treatment, the mileage was 350,000. Before treatment, firebox renewals per 100 engines totalled 14·1 per cent.; after treatment, 1 per cent. Washing-out had previously been done every five days, but afterwards was eliminated, and the water changed every 30 days.

Conditions in Argentina

Early in 1932 the author visited Argentina, where feed-water conditions were bad and the railways were largely using internal treatment, helped in some cases by lime-soda plant. One railway alone used 500 tons of material for internal treatment, costing £30,000 in a year. Despite all these efforts scaling and corrosion were serious, priming was rife, and washing-out was done every round trip or twice a week.

The Buenos Ayres & Pacific Railway had made greater progress in water treatment at that time than most other Argentine railways. Even then a fully-organised water committee met, with a representative from each department of the railway, under the chairmanship of the Chief Mechanical Engineer. The author attended a meeting of this committee and expounded his theories, after which he inspected most of the bad-water sections on the line, and he found a section of 170 miles on which it was possible to isolate the locomotives, a modern 2-8-2 type with steel fireboxes. Three base-exchange plants were installed, and soon a radical improvement was taking place.

* Abstract of a paper read by Mr. A. J. R. Walter, A.I.Loco.E., at a meeting of the Institution of Locomotive Engineers in London on November 21, 1946

After two years it was reported: "The locomotive boilers running in the section have not required the expenditure of a single cent, and the fireboxes, tube-plates, etc., are in brand new condition as if they had never been used. Priming has ceased, and corrosion of steel boilers is non-existent. Locomotives run for three and four months between washing out, which even then is merely the changing of the water. Locomotive mileage is very much increased, and from being a troublesome section, it is now the best on the line."

It was then decided to equip the whole of the western part of the railway with a further 22 plants and close down the 21 existing softeners, despite the stringent financial conditions at that time. That expenditure of £25,000 has paid handsome dividends, for within three years of the whole 25 plants being put to work, the *annual* savings that it was possible to account for exceeded £25,000.

By 1939 the 25 plants had removed about 3,500 tons of scaling salts from the raw waters. In 1932, 168 engines were required for the services in that zone, averaging 3,080 km. per month; in 1939, 118 engines were needed, averaging 4,685 km. per month—a decrease in stud of 30 per cent. and an increase in kilometres per engine of 52 per cent. Engine coal consumption decreased by 3 kg. per km. within three years, and has remained at the lower level. Whereas the limiting factor in operation had previously been the boiler, it was now the running gear, the maintenance of which had to be improved to withstand the new conditions.

Similar developments were carried out during 1934-36 on the Central Railway of Peru, where, in 1940, it was stated that engines on mountain passenger service which had done over 300,000 miles without a change of tubes, were still in service. Much of the equipment on the Buenos Ayres Great Southern Railway has been described in a paper by Mr. Topham (1939). One of the outstanding achievements on this line was the combination of fully automatic plants with automatically controlled diesel pumping sets at many stations, thus eliminating the pump men working in shifts throughout the 24 hours. One fitter with a motor trolley now undertook the operation and control of some 15-18 stations. Plants were visited once a month and needed no attention other than the filling of the large salt saturators.

Capital expenditure on water treatment offered, perhaps, greater scope than in any other sphere of railway operation for a high return, important annual savings, and extra engine availability. Some authorities have stated that this last is one of the largest factors in enabling the steam locomotive to compete against the diesel.

The Ideal Plant

The ideal plant should produce non-scaling, non-priming, and non-corroding water every hour of the day, with as little human control as possible. The base-exchange plant is ideal for this; the lime-soda plant is definitely not. Automatic base-exchange plants have been shown to be foolproof and can be depended upon to do their job without scientific control.

Base-exchange plants will hold the field for some years to come, but in the last 10 years a revolutionary form of treatment, the Deminrolit process, has been developed. It removes from raw waters practically the whole of their mineral content. The process resembles the base-exchange process in that closed vessels containing beds of material are provided, through which the raw water is passed. After passing through two of these vessels the water is equivalent to distilled water.

It costs more to operate than any other treatment, but produces the best-quality water. Distilled water at about 1s. per 1,000 gallons, whilst economical to certain industries, is costly for railways; and locomotive boilers are outstanding for the amount of water they evaporate. Whilst many locomotive engineers would welcome distilled water for boilers, the cost on most normal waters is high, and before a decision could be taken on its economic justification, many factors would have to be considered.

Points from the Discussion

Mr. F. S. Whalley, President, remarked that several years ago one of the South American railways found the water troubles so great that they went to the length of ordering a stainless-steel boiler; its manufacture, with which he had been associated, was extremely difficult, and he was glad that they never had another; clearly, the results of water treatment had rendered that step unnecessary.

Colonel W. L. Topham said that correct water treatment, in conjunction with oil firing where it was economically justifiable, could virtually revolutionise a locomotive running department in the field of availability alone. In his own paper, in 1939, he had shown that certain after-treatments were sometimes necessary for feed water. Certain waters were very high in chlorides, which were not normally removed by the base-exchange process, and since chlorides caused more corrosion than any other impurities, he would have liked to hear more about the possibilities of the Deminrolit process.

Copper corrosion by alkaline waters could be kept down if the concentrations were limited; continuous blow-down could, therefore, be adopted without any serious waste of fuel, but continuous blow-down was useless for hard water. Regarding internal treatment, its weakness was that one had to rely entirely on the driving staff to ensure that it was carried out properly.

Mr. E. S. Cox referred to his observations during a visit to the U.S.A., where, unlike South America, the lime-soda process was generally used. The results he had seen were more or less in direct proportion to the extent to which—and the integrity with which—the treatment had been applied. Results of particular interest were being obtained on three of the railways, on the New York Central, the Chesapeake & Ohio, and the Illinois Central, each of which had obtained complete control of the water treatment; boilers were clean, priming was absent, and there was no corrosion.

On the New York Central, locomotives of one class were now running 200,000 miles a year, which would have been impossible without water treatment. The lime-soda process, therefore, did seem to give full results. It did, admittedly, give a deposit of relatively soft scale, but he had no evidence that it brought any troubles in its train.

Mr. P. J. Hyland said that on the L.N.E.R. several lime-soda plants used river waters, and even under flood conditions they had not experienced any real difficulty in getting satisfactory results. Base-exchange apparatus, however, needed large pre-filtering plant; under flood conditions the silt might necessitate the shutting down of the base-exchange plant.

On the Great Northern section, the L.N.E.R. operated a chain of water-softening plants aiming at 2 deg. hardness or less, and zero hardness in the boilers. Before 1939, Pacific locomotives used this water; they were fitted with blow-downs, and the boilers kept clean, tube replacements being almost eliminated and availability much increased. Further, at one depot alone, the boiler repair staff were reduced from 24 to 4.

Mr. Hinton Cooper mentioned the installation of base-exchange plants on the Lahore-Karachi section of the North Western Railway (India). A curious difficulty in the early stages, when some engines would prime on a particular section, while others did not, was eventually traced to incrustations inside a long pipe from the plant to certain water columns, sufficient to create hardness in the water passing along the pipe and thus affecting locomotives taking water at the remote water columns.

Mr. S. B. Jackson said that the author had made an important contribution to locomotive engineering, for the base-exchange process represented a great bulwark against diesel traction, and probably the only bulwark against electrification. The cycle efficiency of the "Coronation" locomotive, L.M.S.R., could be taken as 17·3 per cent., but there was in existence a power station with a cycle efficiency of 52·5 per cent., and at Battersea power station it was 48 per cent. Vigorous measures were needed if locomotive engineers were to preserve their own interests.

A "Coronation" locomotive hauling 450 tons at 60 m.p.h. would consume 42·5 gal. of water per mile; 10,000 gal. thus sufficed for 22·6 miles. At an evaporation of 8 lb. water to 1 lb. coal, 0·558 ton of coal would be burned over this distance. The relative costs per 1,000 gal. (boiler repairs, fuel, cost of treatment, upkeep, obsolesence, and interest) were: lime soda, 302d.; base-exchange, 293d.; untreated, 318·05d.; the saving with base-exchange softening was about 0·58d. per mile, sufficient to justify the introduction of base-exchange plants and the scrapping of the lime-soda plants.

The Author Replies

Mr. A. J. R. Walter, replying, said that Mr. Topham would appreciate that, unlike a power station needing about 1 per cent. make-up feed, a locomotive needed 100 per cent., so that one small locomotive might use as much water in a day as a large power station. However, two Deminrolit plants were being installed on railways, which would answer the question of whether it was economic to pay the cost of what was practically distilled water, which necessitated no blow-down and no washing-out. It might be some time before it became economically justifiable.

Could Mr. Cox and Mr. Hyland tell him that locomotives in this country would run several thousand miles, and for one or two months, without washing out? If lime-soda plants gave better results than base-exchange softeners, then as a manufacturer he would be delighted, since the selling price of the former was about twice that of the latter; but he believed in supplying the plant best suited to the job to be done. He was interested in Mr. Jackson's remark that with lime-soda plants zero hardness was obtained after the water was fed into the boiler. It was difficult with that process to remove the last 2 deg. of hardness from the water, but it could be done in a boiler because the heat and the excess alkalinity present caused the precipitation of the hardness within the boiler.

New Passenger Coaches in Canada and U.S.A.

Experiments to increase passenger comfort and accommodation

A NEW streamline bedroom-buffet-lounge coach, the first of its kind to be built in Canada, recently has been completed at the Point St. Charles shops of the Canadian National Railways at Montreal, and is the forerunner of 20 similar coaches on order. The first coach will be placed in service between Montreal and Vancouver, others will be used on the Montreal-Halifax run, and the remainder will be included on international trains running between Montreal, Toronto, and Chicago.

In the new coach, which is shown in the right-hand illustration above, four double bedrooms have partitions which fold back into the wall, so that they can be made up into suites, and the furnishings include a convertible sofa for daytime use and the latest type of Pullman beds. A spacious lounge is fitted with a writing table, twelve chairs, three built-in seats, and a high-backed private seat enclosure to accommodate four persons in comfort. The solarium compartment marboleum floor covering bears a picture of Fort Lawrence—the name of the new coach—inlaid in the centre. A compact buffet in stainless steel has the latest type of equipment. For the first time, a small private room has been set aside for the coach porter, and this is equipped with a comfortable lounge seat convertible to a couch, and a neat white-enamel wash basin and mirror.

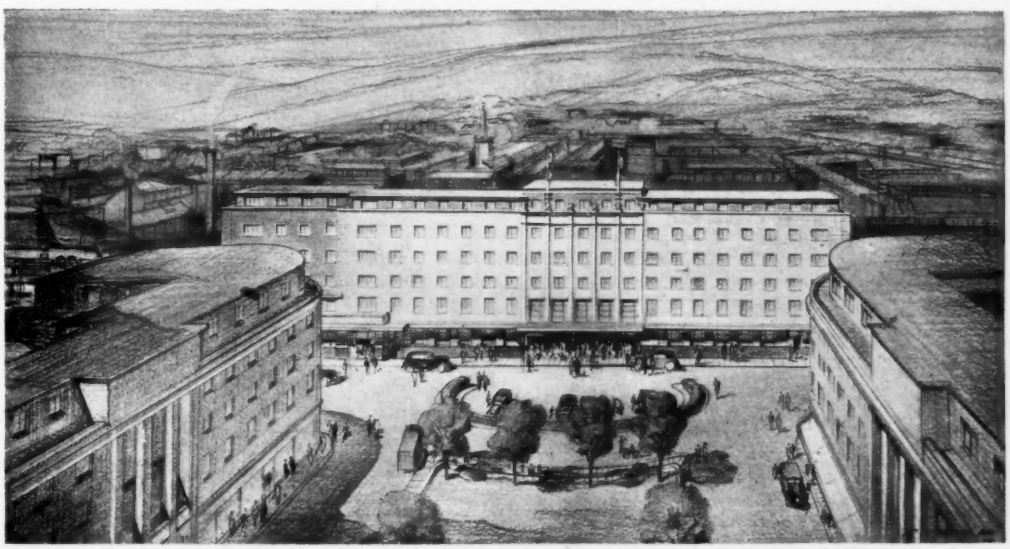
The coach is equipped with an automatic cycle-modulation heating and zone control air-conditioning system which allows occupants to adjust the temperature to their own comfort.

The photograph reproduced on the left shows a new type of double-decker coach introduced in the United States. This is one of three electrically-operated coaches, built as an experiment, in which there is accommodation for 134 passengers, as compared with the normal capacity of 72.

An experimental double-decker coach in service in the United States

A view of the new partitioned bedroom-buffet-lounge coach built by the Canadian National Railways

New Swindon Station and Hotel, Great Western Railway



An artist's impression of the proposed new station and hotel at Swindon, G.W.R.

Scenes on the Route of the Royal Tour of South Africa

During the Royal tour of South Africa, British-built locomotives will haul the Royal Train. Above is a class "15 F" locomotive, of which many have been built by the North British Locomotive Co. Ltd. and Beyer, Peacock & Co. Ltd., approaching Kroonstad, O.F.S., at which the Royal party is due on March 10

Coal train hauled by a Beyer-Garratt class "GL" locomotive at Vryheid (Natal). The "GL" class is the largest type of locomotive in the world working on the 3-ft. 6-in. gauge. The Royal party is due at Vryheid on March 24. Details of the tour and a map were given in our January 31 issue

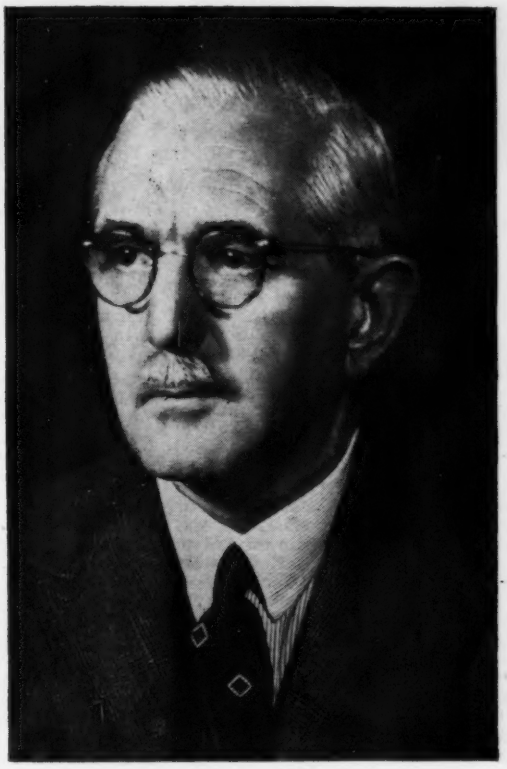
RAILWAY NEWS SECTION

PERSONAL

Brigadier C. A. Langley, C.B.E., M.C., has been appointed an Inspecting Officer of Railways, Ministry of Transport, with effect from October 7, 1946.

Mr. William James Kinlay Skillicorn, C.B.E., M.Inst.T., who, as recorded in our issue of November 29 last, is retiring on April 30 next from the position of General Manager, Rhodesia Railways, served for six years with three English railways before joining the Natal Government Railways in 1903, of which he became Chief Rates Officer in 1906. At the time of Union (1910) he was transferred to the headquarters of the South African Railways at Johannesburg, and in 1913 he was advanced to Principal Clerk (Rates), and in 1919 to Assistant Superintendent. In the next year he was appointed Rates Assistant to the General Manager, whereafter he organised and introduced the grain elevator system in South Africa, having previously studied the subject in Canada and the U.S.A. After ranking as Controller of Grain Traffic, Mr. Skillicorn became Divisional Superintendent, Kimberley, in 1925, and later was in charge of the railways and harbours in South West Africa. He was promoted System Manager, Eastern Transvaal, in 1929, and from 1930 he was, for four and a half years, System Manager, Cape Western System. Mr. Skillicorn was appointed Assistant General Manager (Commercial) in 1935. For two periods aggregating nine months he acted as General Manager of the South African Railways. He was appointed General Manager, Rhodesia Railways, in 1938. Mr. Skillicorn had been connected with many commissions and conferences in South Africa. From 1903 until Union he attended every rates and inter-colonial conference, and he attended the National Convention. He was a member, and Secretary, of the Grain Elevator Commission in 1918; and assessor-member of the first Board of Trade & Industries; Chairman of the Departmental Tariff Inquiries Committee (1930); a member of the Cape Town Foreshore Inquiries Committee, 1931; Chairman of the Moulding Trade Inquiry, 1934; and Chairman of a committee appointed by the Minister in 1934 in connection with the export of fruit and maize from the Eastern Transvaal. Other important work carried out by him included the main revisions of South African railway tariffs over the period 1910-22, and the collation of data and evidence for the Granet Commission, and for the South West African Economic Commission in 1933. Mr. Skillicorn is a Commander of the Order of St. John of Jerusalem, and was awarded the C.B.E. in 1944. He has completed just over fifty years continuous railway service. His father completed 47 years railway service in England.

Mr. W. J. K. Skillicorn
General Manager, Rhodesia Railways, 1938-47



Sir Arthur Griffin
Appointed General Manager & Resident Director, Rhodesia Railways

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Mr. A. P. Reynolds, Chairman of the Irish Transport Company, has been re-elected Chairman of the Irish Railway Clearing House Committee for 1947.

Sir Arthur Griffin, K.C.I.E., O.B.E., B.Eng., who, as recorded in our January 3 issue, has been elected a Director of Rhodesia Railways Limited, and who on April 30 next takes up the appointments of General Manager & Resident Director in Rhodesia, was until recently Chief Commissioner of Railways, India, from which position he proceeded on leave in May, 1946, preparatory to retirement. Sir Arthur Griffin went to India in 1911, when he was posted to the North Western Railway. As an officer in the Royal Engineers Special Reserve, he was recalled to military duty and left India in 1914. In 1916 he was transferred from the European to the Mesopotamian front, where he served under the Railway Directorate and was appointed a Deputy Assistant Director of Railways. In 1918 he was transferred to the War Office for work in connection with the Transportation Commission to the Peace Conference in Paris. His services were lent to the Civil Government of Mesopotamia in 1920, and he served there as Deputy-Director of Railways until June, 1924, and subsequently as Director. During his war service Sir Arthur Griffin was twice mentioned in dispatches; he was awarded the O.B.E. (Military) in January, 1919. He returned to India in 1925, and was appointed Divisional Engineer, Karachi, N.W.R.; later he was placed on special duty there in connection with the design and layout of railways in the port area. In 1930 he was appointed Principal of the Walton Training School for N.W.R. staff. For two

Mr. M. A. Metcalf

Appointed Vice-President & Executive Assistant, Canadian National Railways

Mr. E. S. Hunt

Appointed District Goods Manager, London, L.M.S.R.

Mr. H. Eccles

Appointed Station Working Assistant to Chief Operating Manager, L.M.S.R.

periods—July-September, 1931, and April-November, 1933—he officiated as Deputy Agent of that system. In November, 1934, he was made Divisional Superintendent at Rawalpindi, and two years later at Delhi. In May, 1938, he was appointed Secretary, Railway Board (Government of India), which position he relinquished to become General Manager, N.W.R., in 1940. When Sir Arthur Griffin received his knighthood in the New Year Honours, 1943, he became the first General Manager of the N.W.R. to receive that honour during his tenure of that office. He was appointed to succeed Sir Leonard Wilson as Chief Commissioner of Railways in September, 1944, when Sir Leonard Wilson proceeded on leave preparatory to retirement. During August to October, 1945, Sir Arthur Griffin officiated for Sir Edward Benthall as Member for War Transport of the Viceroy's Executive Council while the latter was on leave. In the October, 1945, issue of the *North Western Railway Magazine* Sir Arthur Griffin was referred to as "the only man in the whole history of Indian railways ever to serve on the Viceroy's Executive Council." He was made a K.C.I.E. in the King's Birthday Honours, 1946, and is an Officer of the Order of St. John of Jerusalem.

Mr. Maynard A. Metcalf, C.B.E., Executive Assistant to the President, Canadian National Railways, who, as recorded in our February 7 issue, has been appointed Vice-President & Executive Assistant, was born at Toronto Junction, Ontario, on December 23, 1895. In 1910 he joined the Canadian Northern Railway as a junior clerk, and in 1917 was appointed Secretary to the General Manager. A year later he became Secretary to the Assistant Vice-President and, in 1920, Secretary to the Vice-President, Operation & Construction. After the amalgamations forming the Canadian National Railways, Mr. Metcalf went to Montreal as Secretary to the Operating Vice-President of the system. He was appointed Secretary to the Acting President in 1932, Secretary to the President in 1934, and Assistant to the President in 1936. He became Executive Assistant to the President in August, 1943. Mr. Metcalf is a former Mayor of the Town of Mount Royal. He was made a C.B.E. last year in the Canadian Dominion Day Honours.

Mr. E. S. Hunt, Station Working Assistant to Chief Operating Manager, Watford H.Q., L.M.S.R., who, as recorded in our January 3 issue, has been appointed District Goods Manager, London, entered L.N.W.R. service, and, at the outbreak of war in 1914, was attached to the Outdoor staff of the District Traffic Superintendent, Euston. In 1915 he obtained a commission in the R.N.V.R., attached to the R.N.A.S. for six months, after which he served afloat with the 10th Cruiser Squadron, until after the termination of hostilities. In 1919 he returned to the L.N.W.R. as Second Assistant in the Transit Section, Chief Goods Manager's Office. After 12 months in that capacity he was appointed to the outdoor staff of the Road Transport & Cartage Section, Chief Goods Manager's Office. When the amalgamation took place, Mr. Hunt was appointed Head of the Development Section, Chief Goods Manager's Office, L.M.S.R. Early in 1924 he became Head of the Station Working & Terminal Section, Southern Division, and in 1927 was appointed Outdoor Assistant to Goods Operating Manager. In 1928 he was made Operating Assistant to Goods Operating Manager, and in that year was appointed L.M.S.R. Chief Goods Manager's representative on the L.M.S.R. & G.W.R. Closer Working Committee. In 1930 he became Station Working Assistant to the Chief Goods Manager. In January, 1931, he was appointed a member of the L.M.S.R. Job Analysis & Inter-Departmental Relationship Committee, appointed by Lord Stamp; and in July, 1932, became L.M.S.R. Chief Goods Manager's representative on the L.M.S.R. & L.N.E.R. Pooling Committee. In September, 1932, Mr. Hunt was appointed Goods Station Working Assistant to the Chief Operating Manager. In January, 1933, he was made Chief Operating Manager's representative on the L.M.S.R. & G.W.R. and L.M.S.R.-L.N.E.R.-G.W.R. Pooling Committees. During the recent war Mr. Hunt, in addition to normal duties, acted as Liaison Officer for the Chief Operating Manager with the Admiralty, War Office and Air Ministry in connection with the loading and unloading arrangements at all Service department depots connected with the L.M.S.R.

Mr. H. Eccles, M.Inst.T., J.P., District Goods & Passenger Manager, Stoke, L.M.S.R., who, as recorded in our January 3 issue, has been appointed Station Working Assistant to Chief Operating Manager, Watford H.Q., commenced his railway career at Newton-le-Willows, L.N.W.R., and, after serving at Broadheath and Latchford, was transferred to the District Goods Manager's Office at Warrington in 1914. From 1916 to 1920 his services were lent to the Inland Transport Department of the Ministry of Munitions, and he returned to Warrington at end of 1920. His subsequent appointments included those of Assistant Commercial Clerk and Chief Accounts Clerk, after which Mr. Eccles was appointed Chief Commercial Clerk at Warrington in 1931; he was made Commercial Assistant in 1938, and Assistant District Goods Manager in 1941. In May, 1944, he was transferred to Liverpool as Assistant District Goods Manager, and in August, 1945, was appointed District Goods and Passenger Manager, Stoke.

Mr. Louis Le Clair

On February 6 a luncheon was given at the Dorchester Hotel, Park Lane, London, W.1, to Mr. Louis Le Clair, formerly Engineer, Westinghouse Brake & Signal Co. Ltd., on his retirement. Mr. O. V. S. Bulleid presided at the luncheon, and among those present were:—

Messrs. W. A. Agnew, H. H. Andrews, G. Arnott, G. H. Bailey, J. E. Beckett, R. C. Bond, G. C. Brinkworth, A. Campbell, A. E. Cook, C. H. Dee, E. J. Fouracre, W. S. Graff-Baker, Lt.-Colonel E. Graham, O.B.E., Lt.-Colonel E. Gresham, Major H. A. Harrison, Messrs. R. S. E. B. Hart-Davies, C. G. Hatherly, O.B.E., W. G. Hornett, J. A. Kay, A. J. D. Kitson, D. R. Lamb, A. H. Peppercorn, O.B.E., Captain B. H. Peter, C.B.E., Messrs. F. Playford, R. A. Riddles, C.B.E., Sir William Stanier, F.R.S., Messrs. C. S. L. Trask, J. S. Tritton, J. F. B. Vidal, M.C., W. J. Wakley, W. L. Watson, C.B.E., G. M. Wells, F. S. Whalley, M.C., R. H. Whitelegg, W. Cyril Williams, and A. G. Wilson.

The Transport Bill in Standing Committee

Opposition to the Transport Bill was continued when the House of Commons Standing Committee, a list of members of which was given in our January 31 issue, held its second meeting on February 6.

Sir David Maxwell Fyffe (West Derby—C.) moved an amendment which sought to ensure that members of the Transport Commission gave their exclusive service to that body.

Mr. Ernest Davies (Enfield—Lab.) said he agreed that, in the early days, members of the Commission should serve full time, but he thought it going too far to stipulate that they should give their exclusive services.

The amendment ties the hands of the Minister too severely, and, while full-time members will be necessary in the early days, later, when the executives get going, it is only right that the Minister should have the power to appoint part-time as well as full-time members.

Lt.-Commander J. G. Braithwaite (Holderness-C.) said that what Mr. Davies had suggested was that full-time members of the Commission should only carry out their duties until the operations under Clause Three of the Bill were completed. He would be surprised if the Parliamentary Secretary agreed to this. It would be tantamount to saying that socialism would only become a part-time malady, and, later, the surgeons would only have to carry out part-time operations if there was any electricity to carry them out at all.

Mr. G. R. Strauss (Parliamentary Secretary, Ministry of Transport), replying, said he could assure the Committee that the Commission would, on its first appointment, be full-time commissioners until the initial proposals of the Bill had been overcome. But they had to consider whether it was wise to embody in the Bill a rigid rule making the members full-time in perpetuity. The time might come when it would be desirable for one or more of the commissioners to be part-time.

Mr. Ralph Assheton (City of London—C.) said that the Opposition did not really believe that four men were capable of doing this immense job. They had hoped to see a large commission, but if the Minister insisted on four, they thought it necessary that they should give their full time to the work.

Several other members of the Opposition said that they supported the amendment "with reluctance." They were forced to do so, said Sir A. Slater (Oxford University—Ind.) because, although they agreed that there should be some liberty to employ part-time people, the decision to have a rigid limitation of numbers necessitated that it should be a full-time Commission.

The Amendment was defeated by 21 votes to 18.

Opposition members sought to effect an alteration in the clause under which it was stipulated that a Minister, before appointing members of the Commission, should satisfy himself that the person would have no financial interest as would be likely to affect him in the discharge of his functions. They asked that, in addition to financial interests, other interests might also be a disqualification.

Brigadier H. R. Mackeson (Hyde—C.), who proposed the amendment, said that never since the days of the Stuarts had Executives been given such powers. It was most important that there should be no suspicion that these men were influenced in their functions as commissioners either by financial interests or otherwise.

Sir David Maxwell Fyffe said that point raised a vital question for the future of these public corporations. The Hon. Member for Enfield has said that members of the Commission must be free to pursue political activities.

Mr. Ernest Davies (Enfield—Lab.) "What I said was, this may exclude people from undertaking their political activities."

Sir David, continuing, said that if members of such commissions were to be free for party politics, then the position was getting serious. "It is a re-introduction of patronage, jobbery, and place men on a scale we have not so far seen in our public life," he said.

Mr. Strauss, replying, said he agreed that there was something in the point.

The amendment moved by Brigadier Mackeson was withdrawn when the Parliamentary Secretary said that further consideration would be given to the matter.

Another amendment asked that full information concerning Commissioners' salaries, pensions, allowances, and fees should be made known by the Minister at the time of the appointments, and, thereafter, annually.

Mr. Strauss said the amendment was unnecessary as the Minister was answerable to Parliament for any appointment he made and must disclose to Parliament the financial terms of the appointment; thereafter, he could be questioned at any time, and forced to give an answer in the House.

On the assurance that the Minister would publish salaries and particulars—by *Hansard* if necessary—this amendment was also withdrawn.

Replying to Mr. Ralph Assheton, who said that, as the Bill stood, the Commission was too small, not flexible enough, and not representative of the consumers' interests, Mr. Strauss said the question of its flexibility would be brought to the attention of the Minister.

The first clause of the Bill was approved by 23 votes to 15.

The Committee adjourned until Tuesday.

London Transport in the Cold Spell

A special message of congratulation has been sent from Lord Ashfield, Chairman of the London Passenger Transport Board, to the staff on the work performed during the present cold spell. On the three worst days of the frost, snow and ice (January 28-30), the total delay to trains due to weather averaged only ten minutes. An average of only 10 trains a day out of over 400 was delayed by freezing-up during the present cold spell and two other shorter spells in December and January. This was an improvement of 60 per cent. on the number of trains which froze-up in the last big cold spell, in 1942, which was less severe. Buses running over icy and snowbound roads lost, on the worst day of the cold spell, only 612 miles out of 660,000, or less than a tenth of one per cent.

The results were due to two factors: first, the loyalty of London Transport staff, who despite the cold spell stuck to their job—their absence from work during the spell was no higher than normal—and secondly to the recent installation of anti-frost devices. In addition to conductor rail de-icing baths and electric point heaters, the board has installed the following new devices on the trains themselves: 1,800 alcohol anti-freezing units in air brake systems; 3,500 drainage receptacles for water condensing in brake pipes; 1,100 metal covers to shield moving brake parts; 200 heaters for brake controllers; and 350 metal covers for electro-pneumatic brake units.

Some details of London Transport anti-frost devices for the permanent way were published in our January 3 issue.

Notes and News

Assistant Transport Manager Required.—An assistant transport manager, under 35 years of age, is required by a large national organisation. See Official Notices on page 195.

L.M.S.R. Ordinary General Meeting.—The ordinary general meeting of the London Midland & Scottish Railway Company is to be held at Euston Station, London, N.W.1, on Friday, February 28, at 11.30 a.m.

Traffic Instructor Required.—A traffic instructor, not over 35 years of age, is required by the Gold Coast Government Railway for two tours of 18 to 24 months each, with possible permanency. See Official Notices on page 195.

Stationmaster Required.—A stationmaster, not over 30 years of age, is required by the Government of Tanganyika Territory for the railways and ports services, for one tour of 24 to 36 months, with possible permanency. See Official Notices on page 195.

B.T.H. and Five-Day Week.—Following the introduction of a five-day working week in its factories, similar arrangements have been made by the British Thomson-Houston Co. Ltd., Rugby, for all its offices, and as from February 3, therefore, all the offices of the company as well as its factories are closed on Saturday mornings.

Permutit Co. Ltd. Five-Day Week.—The Permutit Co. Ltd. announces that it is now operating a five-day working week, and requests suppliers, customers and carriers to note that no goods can be received or despatched at its works on Saturdays.

L.N.E.R. Ordinary General Meeting.—The ordinary general meeting of the London & North Eastern Railway Company will be held at Grosvenor House, Park Lane, London, W.1, at 2 p.m. on March 7. An extraordinary general meeting will be held at the conclusion of the business of the ordinary general meeting to consider a Bill the company proposes to promote.

London Midland & Scottish Railway.—The board of the London Midland & Scottish Railway Company on February 7 stated that the net revenue of the company for the year 1946, ascertained in accordance with the terms of the Transport Bill now before Parliament, was £15,923,000. At its meeting the board decided to recommend the following dividends to be paid on March 12:—4 per cent. guaranteed stock, 4 per cent. preference stock, and 4 per cent. preference stock (1923), at £2 per cent. actual, less income tax at 9s. in the £, making with the interim payment £4 per cent. for the year 1946; ordinary stock, at £2 15s. per cent. actual, less income tax at 9s. in the £. After pay-

ment of the dividend on the ordinary stock there is a balance for the year 1946 of £392,000 and having regard to various uncertainties in the Transport Bill the board regards the dividend as in effect an interim payment for the two years 1946 and 1947, regarded as one.

Railway Workers' Wages Claims.—The three railway trade unions jointly have submitted a claim for an all-round increase of £1 a week in wages and for a reduction in hours of working to 40 a week in the case of the National Union of Railwaymen and the Associated Society of Locomotive Engineers & Firemen, and to 35 in the case of the Railway Clerks' Association.

Belfast & County Down Railway Co. Ltd.—A statement by the directors of the Belfast & County Down Railway Co. Ltd. announces that the financial position for the year 1946 does not permit the payment of dividends on the preference or ordinary shares. The company's last ordinary dividend was that for 1925, and nothing has been paid on the 4 per cent. preference stock since 1926. Dividends on the 5 per cent. cumulative preference stock are in arrears from December 31, 1932. In 1945, a year's dividend was paid on the 4½ per cent. "A" preference stock.

Society of British Paint Manufacturers.—At the annual general meeting of the Society of British Paint Manufacturers Limited, held recently in London, in the absence abroad of the President (Mr. C. G. Heywood), the Vice-President (Mr. N. M. Hadfield) gave a review of the working of the Society. Having thanked the Council, he stated that we should be encouraged by the thought that, as a nation, our greatest asset was a reputation for determination and common sense. The Society would uphold that reputation and, above all, the industry's tradition of craftsmanship. The product of such craftsmanship always would have exportable value.

Handling Goods at London Docks.—A contract has been placed by the Port of London Authority with Industry & Trade Development Limited, 29, Palace Gate, London, W.8, for the supply of Stacatruc mechanical hauliers and stackers for use at the London Docks. These trucks, which are a British product, were fully described and illustrated in our issue of October 18, 1946. They were first used in this country during the lease-lend period and are now standard equipment for the British forces. A number of the trucks were used by the Americans at the London Docks during the war, and the authorities then were so impressed by the saving effected in time and labour, that they decided in due course to adopt this latest method of handling goods.

Associate Membership of the Travel Association.—An opportunity for individual citizens to play their part in the drive to attract tourists to this country is provided by a new membership scheme launched by the Travel Association of Great Britain & Northern Ireland. Members of the public are invited to become associate members of the Association at an annual subscription of £1, and as evidence that they have joined this movement, which has as its object the promotion of national prosperity and world friendship, they will receive a membership card which will serve as an introduction to any tourist organisation in the world. The new scheme was launched by Sir Harry Brittain, Vice-President of the English Speaking Union and of the British Empire Society, on January 28, when he presented a membership card to the first associate member, Miss Eileen Herlie, the well-known actress. Sir Harry said that members were asked to accept the belief that international understanding and goodwill could best be promoted by the free movement of peoples between the countries of the world, and that Britain could best be developed as a tourist centre by the concerted action of all citizens in affording a welcome and service to the overseas visitor.

Extension of G.W.R. Zonal Scheme for Goods Traffic.—Three new zones in the G.W.R. zonal scheme to speed up the conveyance of small consignments of merchandise by goods train, came into operation on February 1. They are based on Exeter, Swansea, and Llanelly. The scheme is designed to give a one-day transit time between all parts of the G.W.R. system. Collection and delivery within each zone is undertaken by the company's road fleets, operating from the main and sub-railheads instead of from individual stations, thus enabling full truck loads to be made up and despatched by fast freight trains direct to main or sub-depots in other zones. Sixteen zones are in operation already, and shortly 36 will cover the whole of the G.W.R. system. The scheme was inaugurated in the Birmingham district, as recorded in our January 25, 1946, issue. Particulars of the new zones are given below:—

Railhead of main depot	Sub-railheads	No. of station at present handling
Exeter	Cullompton ...	16
	Tiverton	
Swansea	—	8
Llanelly	Llanelly	34
	Ammanford	
	Carmarthen	
	Llandysull	

Carmarthen and Llandysull sub-depots will be brought into operation at a later date.

Jonas Woodhead & Sons Ltd.—At the recent annual general meeting of Jonas Woodhead & Sons Ltd., the Chairman, Captain Allan G. Kyle, said that although the trading profit for the year showed a substantial drop from £77,929 to £49,020, the company had been able to place £30.000 to general reserve, to maintain its dividend at 10 per cent., and to increase its carry-forward by £2,720. They thus emerged from a difficult year with an even stronger balance sheet, and in a position to meet the problems involved in a development programme designed to extend the capacity and efficiency of the various companies of the group, and of the new enterprises in Scotland and South Africa. It was to meet the capital expenditure required that the company was proposing to increase its capital by 600,000 ordinary shares of 5s. each. The company's new Scottish factory was nearing completion, and the new factory in South Africa should be in full operation in the very near future. There were good grounds for feeling confident in the successful future of the South African venture. The development of the Woodhead-Monroe shock absorber was proceeding satisfactorily, and the interest shown in this component by bus and railway companies led them to believe that it would find wider adoption.

L.M.S.R. Telephone Cable Contract.—The L.M.S.R. announces that a contract has been placed with Pirelli-General Cable Works Limited, of Western Shore, Southampton, for the provision and installation of 38 pair carrier and voice frequency loaded telephone cables between Euston and Watford, extending to the north end of Watford Tunnel (approximately 19 miles from Euston).

G.W.R. Annual Meeting.—The annual general meeting of the Great Western Railway Company is to be held at the Great Western Royal Hotel, Paddington Station, London, W.2, on Wednesday, March 5, at 11.30 a.m.

G.W.R. Vans for Goods Storage.—The G.W.R. is providing traders with emergency storage accommodation by using unserviceable covered goods vans as temporary warehouses, while repairs or exten-

British and Irish Railway Stocks and Shares

Stocks	Highest 1946	Lowest 1946	Prices Feb. 7, 1947	Prices Rise Fall
G.W.R.				
Cons. Ord.	61½	54½	58	—
5% Con. Pref. ...	126½	107	122½	+ 1
5% Red. Pref. (1950)	106½	102½	104½	—
5% Rt. Charge ...	140½	122½	134½	—
5% Cons Guar. ...	137½	118½	133½	+ 1
4% Deb.	129½	106	124½	—
4½% Deb.	129½	107	124½	+ 1
4½% Deb	130½	114	125½	—
5% Deb.	142½	125	136½	—
2½% Deb.	95½	81½	92½	—
L.M.S.R.				
Ord.	30½	26½	29½	— ½
4% Pref. (1923) ...	64	52½	61½	—
4% Pref.	86	75½	83½	+ 1
5% Red. Pref. (1955)	105½	97	100½	— 1
4% Guar.	108½	100	104½	—
4% Deb.	120	103	114½	+ 1
5% Red. Deb. (1952)	108½	105½	105½	—
L.N.E.R.				
5% Pref. Ord. ...	7	5	6¾	—
Def. Ord.	3½	2¼	3⅜	—
4% First Pref. ...	59½	50½	56½	—
4% Second Pref. ...	29½	25¾	29½	+ 1
5% Red. Pref. (1955)	104	97	100½	—
4% First Guar. ...	107	98	102½xd	—
4% Second Guar. ...	101	90	96½xd	—
3% Deb.	104	87½	99	—
4% Deb.	119½	102½	113½	—
5% Red. Deb. (1947)	101	99	99½	—
4½% Sinking Fund Red. Deb.	107½	101½	102½	—
SOUTHERN				
Pref. Ord.	79½	70	76	—
Def. Ord.	24	19½	23½	—
5% Pref.	125½	107	122½	+ 2
5% Red. Pref. (1964)	115½	106½	112½	—
5% Guar. Pref. ...	137½	119	133½	+ 1
5% Red. Guar. Pref. (1957)	115½	107½	112½	—
4% Deb.	129½	105½	124½	—
5% Deb.	159½	125½	134½	—
4% Red. Deb. (1962-67)	113½	104½	109½	—
4% Red. Deb. (1970-80)	115½	104½	111½	—
FORTH BRIDGE				
4% Deb.	109	103	104½	—
4% Guar.	105	102	101	—
L.P.T.B.				
4½ "A"	133½	120½	128½	+ 1
5% "A"	142½	130½	137½	+ 1
3% Guar. (1967-72)...	108	98½	105	—
5% "B"	128½	117½	125½	+ 2
"C"	64½	56½	64½	+ 1
MERSEY				
Ord.	34	30	35	+ 1
3% Perp. Pref. ...	76	69	73½	—
4% Perp. Deb. ...	117½	103	111	—
3% Perp. Deb. ...	98	81	92½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	41½	31½	37	—
Pref.	63¾	52	62½	—
Guar.	97½	78½	96	—
Deb.	107	97½	106	—
IRISH TRANSPORT				
Common	19/2½	16/9	17/4½	—
3% Deb.	107	100	104¾	—

* Latest available quotation

OFFICIAL NOTICES

London & North Eastern Railway Company

NOTICE IS HEREBY GIVEN that the Twenty-fourth Ordinary General Meeting of the Proprietors of the London & North Eastern Railway Company will be held at Grosvenor House, Park Lane, London, W.1, on Friday, the seventh day of March, 1947, at 2.0 p.m., for the purpose of the general business of the Company appointed to be done at an Ordinary Meeting, and for the determination of the remuneration of the Auditors for the year 1947.

NOTICE IS HEREBY FURTHER GIVEN that, in accordance with the Standing Orders of Parliament, an Extraordinary General Meeting of the Proprietors of the Company will be held at the same place on the same day at 3.0 p.m., or as soon thereafter as the business of the Ordinary General Meeting is concluded, for the purpose of considering and, if thought fit, of approving the Bill intituled:—

"A Bill to empower the London & North Eastern Railway Company to construct railways, a widening of railway and other works, and to acquire lands; to extend the time for the completion of certain works and for the compulsory purchase of certain lands; to confer further powers on the Company; to dissolve the Hull South Bridge Company; and for other purposes."

Dated this 12th day of February, 1947.

By order,
W. H. JOHNSON,
Secretary of the Company

Marylebone Station,
London, N.W.1

Assistant Transport Manager

LARGE national organisation requires the services of a young man with comprehensive railway experience as Assistant to the Transport Manager. The successful applicant should be under 35 years of age, and submit unimpeachable references as to character and ability. The position offered is a pensionable one, and carries a commencing salary of £500 p.a., with prospects limited only by the capacity of the individual. Applications received in strict confidence by Box 68, *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

London Midland and Scottish Railway Company

NOTICE IS HEREBY GIVEN that the next ORDINARY GENERAL MEETING of the London Midland and Scottish Railway Company will be held at Euston Station, London, N.W.1, on Friday, the 28th day of February, 1947, at 11.30 a.m. precisely, for the transaction of the general business of the Company.

ROBERT A. BURROWS, Chairman
G. R. SMITH, Secretary

Euston Station,
London, N.W.1.
12th February, 1947.

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

STATION MASTER required by the Government of Tanganyika Territory for the Railways and Ports Services for one tour of 24 to 36 months, with possible permanency. Salary £300 to £480 a year, plus cost-of-living and separation allowances at current rates. Commencing salary according to qualifications, experience, age, and war service. Outfit allowance £30. Free quarters and passages. Candidates not over 30, should have had a good secondary education up to matriculation standard and experience in passenger and goods work on a Home Railway. Additional experience with yard working and control, also the electric train staff or tablet system of passing trains would be an advantage. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/16603 on both letter and envelope.

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

ACCOUNTANT required by the Gold Coast Government Railway for two tours of eighteen to twenty-four months with possible permanency. Salary £400, rising to £720 a year. Commencing salary according to qualifications, experience and war service. On salary of £400 a year there is a local allowance of £60 a year and for married men a separation allowance of between £84 and £204 a year, according to number of dependants. Outfit allowance £60. Free passages and quarters. Candidates, age 24 to 34 years, must hold book-keeping and final accounting certificates, be capable of taking charge of a section of a railway accounts office and instructing staff in new or amended simple accounting procedure. Practical experience in railway accounts is preferred, but not essential. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/16204 on both letter and envelope.

Southern Railway Company

NOTICE IS HEREBY GIVEN that the next Annual General Meeting of the Southern Railway Company will be held at Wigmore Hall, Wigmore Street, in the County of London (W.1), on Thursday, the sixth day of March, 1947, at 11.30 a.m., for the purpose of receiving the Accounts for the past year and transacting the general business of the Company appointed to be done at an Ordinary Meeting.

S. E. CLARK,
Deputy Secretary

Waterloo Station
London.
February 13, 1947

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

TRAFFIC INSTRUCTOR required by the Gold Coast Government Railway for two tours of 18 to 24 months each, with possible permanency. Salary £400, rising to £720 a year. Commencing salary according to age and war service. On salary of £400 a year there is a local allowance of £60 a year, and a separation allowance for married men between £84 and £204 a year, according to dependants. Outfit allowance £60. Free passages and quarters. Candidates, not over 35, must have a thorough knowledge of electric train staff working, pilot working, double line block system and safety regulations, a practical knowledge of all sections of passenger and goods station working, including accounts, rates and fares and claims, and a knowledge of centralised train control system, working of shunting yards, train running and traffic statistics. Previous experience with a home railway and experience in the office of a traffic superintendent or goods manager. A knowledge of the method of working at docks in regard to shipping and warehousing exports and imports is also desirable. Preference will be given to a member of the Institute of Transport. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/17615 on both letter and envelope.

URGENTLY WANTED—Two Rail Straightening and Bending Machines capable of handling bull-headed rails up to 100 lb. per yard, 6 in. high by 2⅞ in. wide, and flat-bottomed rails up to 120 lb. per yard, 6 in. flange by 6 in. high.—Box 70, *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

London Midland and Scottish Railway Company

NOTICE IS HEREBY GIVEN that a Special General Meeting of the London Midland & Scottish Railway Company will, in compliance with Standing Orders of Parliament, be held at Euston Station, London, N.W.1, on Tuesday, the 18th day of March, 1947, at 12 o'clock noon, for the purpose of considering, and, if so determined, of approving the undermentioned Bill:—

LONDON MIDLAND & SCOTTISH RAILWAY

"A Bill to empower the London Midland & Scottish Railway Company to construct railways and works and to acquire lands; to confer powers upon the Great Northern and London & North Western Joint Committee, and for other purposes.

ROBERT A. BURROWS, Chairman
G. R. SMITH, Secretary

Euston Station,
London, N.W.1.
February 19, 1947

sions to existing warehouses are carried out, or when the accommodation is insufficient to meet the requirements of the moment. The vans are supplied from a central pool, and run on their own wheels from point to point. To distinguish them they are marked with a white cross.

New E.C.I.T.O. Paris Office.—As from February 3, the headquarters of the European Central Inland Transport Organisation has been located at Room 591, 19, Avenue Kléber, Paris, 16e.

Thos. Cook & Son Hull Office.—Mr. F. Warrener, Manager in Hull for Thos. Cook & Son Ltd., has retired, after forty-eight years service with the company. He is succeeded by Mr. F. J. Watkins, who has been with the firm for thirty-four years.

United Railways of the Havana.—Total receipts from railways, warehouses, and wharves for the year ended June 30, 1946, amounted to £3,178,866, as compared with £2,955,527 in the preceding year. Total expenditure increased from £2,886,356 to £3,092,645, and the balance of £86,221 in 1946 showed an increase of £17,050. After adding various credits to the surplus, and charging debits, there was a debit in respect of the year of £1,085,111, bringing the total net revenue debit balance at June 30, 1946, up to £16,176,743. Discussions took place during the year with the holders of certain debentures and debenture stock with a view to a scheme of debenture capital reorganisation, the previous scheme having been withdrawn with the permission of the Court as announced in the company's circular of April 1, 1946. It was stated at the annual meeting on January 29 that new proposals would be submitted shortly to the stockholders' committee.

The British Columbia Electric Railway.—A plan for civic purchase of the British Columbia Electric Railway Company's transport facilities in Vancouver has been placed before the City Council. The plan, drafted by the Franchise Committee, calls for the purchase of the facilities in 1951, 1956, 1961, or 1966. It is stated that the purchase would be both easier and cheaper under a new agreement than it would under the seven separate agreements and indentures covering the company's Vancouver operations.

X-Ray Examinations at Cowlairs, L.N.E.R.—The Mechanical Engineer, Scotland, L.N.E.R., in conjunction with the Public Health Department of Glasgow Corporation, has arranged for all employees at Cowlairs Works, who so desire, to have free, confidential X-ray examinations of the chest. An ordinary guard's van and carriage body, with only minor alterations, have proved very suitable for the examinations. The vehicles have been partitioned off into sections, providing an undressing room, measuring room, a room for recording medical and industrial data, the X-ray unit, a dark room, three dressing or examination rooms, and a room for washing and drying films.

Forthcoming Meetings

February 18 (*Tue.*)—The Railway Students' Association, London School of Economics, Houghton Street, Aldwych, W.C.2. 6 p.m. "Motive Power Organisation and Operation," by Mr. T. Chrimes, Assistant for Motive Power, Southern Railway.

February 18 (*Tue.*)—The Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1, 3 p.m. and 5.30 p.m. James Clayton Lecture, "The Flow of Metals under Various Stress Conditions," by Dr. D. Nadai, of Pennsylvania, U.S.A.

February 19 (*Wed.*)—The Institute of Traffic Administration, at Livingstone House, 42, Broadway, London, S.W.1. 7 p.m. "Current Transport Problems in the U.S.A.," by Mr. J. A. Dunnage, M.J.I., A.M.Inst.T.

February 19 (*Wed.*)—The Permanent Way Institution (London Section), at the L.P.T.B. Staff Dining Hall, Pelham Street, South Kensington, S.W.7. 6.30 p.m. "The Human Element in Relation to Railway Engineering," by Mr. J. C. L. Train, M.C., M.I.C.E.

February 19 (*Wed.*)—The Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1. 5.30 p.m. "Welded Carriage Underframes on the L.M.S.R.," by Mr. A. N. Moon, B.Sc. (Eng.), Associate Member, and Mr. G. Foster, B.Sc.

Railway Stock Market

Dominated by the repercussions of the fuel crisis, stock markets suffered a sharp reaction, quotations in all sections, apart from the railway and mining groups, being marked down sharply at the beginning of the week as a precautionary measure. British Funds also moved back under the lead of 2½ per cent. Consols, which lost 10s., but no very heavy selling developed, and later the reduced prices tended to attract buyers. Iron and steels reflected the prevailing depression, although colliery shares were relatively steady and other nationalisation groups displayed firmness. In some quarters, the latter was attributed to hopes that the Government may modify its nationalisation policy, but this was considered improbable in responsible quarters.

The better tendency in home rails and in electric supply shares was attributed generally to further institutional buying on the ground that these securities still represent a means of acquiring a 2½ per cent. Government stock at a discount, if more than a short view be taken. Prevailing assumption in the City is that industrial shares may show further heavy declines if the industrial "blackout" resulting from the power cuts is prolonged. Early this week, markets were unsettled by the absence of any official statement, indicating the probable length of the present emergency, although it was recognised that much must depend on weather conditions.

The railway market was disappointed with the L.M.S.R. dividend decision, because although it was not expected that reserves would not be drawn on for dividend purposes, there had been hopes of a dividend of 3 per cent. compared with the 4 per cent. paid for 1945, when slightly over 1 per cent. of the payment came from withdrawal from reserve. It is apparent that the complicated wording and stipulations of the Transport Bill have made it necessary for the L.M.S.R. directors to proceed cautiously, and the 2¾ per cent. payment now announced is an interim payment in respect of 1946 and 1947, which for the purposes of the Transport Bill apparently are to be regarded as one accounting period.

The L.M.S.R. decision had not been anticipated in the market, and the ordinary stock declined sharply to 28½ immediately after the announcement; but buying developed, it being pointed out that 29½ is the "take-over" price, and later there was a rally to 30. Other equity stocks of the main-line railways also firmed up after reacting with L.M.S.R. ordinary.

Prevailing assumption is that a uniform course is likely to be adopted by the railways in the matter of dividends; but that although after the present payments the next are unlikely to be until a year hence, the total payments may be not ungenerous. The belief is that the Transport Bill does not stipulate that the carry-forward or the balance brought in from the previous period cannot be used for dividend purposes at the end of 1947. In fact, there seems a good case for junior stocks being quoted above their "take-over" levels; but with the exception of L.M.S.R., whose dividend decision is known, they are below "take-over" prices at the time of writing, the disposition being to await the other dividend announcements.

Nevertheless, where changed, junior stocks have improved as compared with a week ago. L.M.S.R. ("take-over" price 29½) was 30, compared with 29¾ a week ago; Great Western has firmed up from 57¾ to 58¼, and L.N.E.R. second preference from 28½ to 29; but Southern deferred at 23¼, and the preferred ordinary at 76, were unchanged on balance. London Transport "C" stock gained a point at 65½.

Debenture stocks recorded gains of up to a point, Great Western 4 per cent. being 125, while Great Western guaranteed stock was 134½, compared with 132½ a week ago, and the 5 per cent. preference has risen from 121½ to 123½. In fact, institutional buying of preference and debenture stocks of the main-line railways was again in evidence, and London Transport "A" and "B" stocks also showed further improvement for a similar reason.

Argentine rails provided a firm and lively feature of markets, reflecting continued expectations of an early official announcement confirming reports of a satisfactory agreement regarding the sale of the railways and of an additional sum for the ancillary interests. Shortage of stock accentuated the rise, and there was good demand for debentures particularly those carrying interest arrears. Best levels were not fully held, but profit-taking was not heavy, and prices recorded further gains on balance. Comparison with a week ago shows a further improvement, from 13 to 12½, in Buenos Ayres Great Southern, while the 5 per cent. preference was 49, and the 4 per cent. debentures 87. Buenos Ayres Western was 15¾, and the 4 per cent. debentures 83. Central Argentine and Buenos Ayres & Pacafic stocks were also higher. Central Uruguay second debentures were marked up five points to 49½ on talk of a take-over agreement on similar lines to the Argentine railways.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1944/5	No. of Week	Aggregate traffics to date: Totals 1946/7	Aggregate traffics to date: Totals 1945/6	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1945	Prices: Lowest 1945	Prices: February 7, 1947
				£	£		£	£	£				
South & Central America	Antofagasta	834	2.2.47	37,390	+ 7,570	5	179,470	155,880	+ 23,590	Ord. Stk.	12	8¼	9½
	Arg. N.E.	753	1.2.47	ps.319,400	+ps.22,000	31	ps.9,783,600	ps.9,264,600	+ ps. 519,000	,,	10	5½	21
	Bolivar	174	Jan., 1947	$115,069	— $6,787	4	$115,069	$121,856	— $6,787	6 p.c. Deb.	8½	5½	6½
	Brazil	—	—	—	—	—	—	—	—	Bonds	25	17	28½
	B.A. Pacific	2,771	1.2.47	ps.2,650,000	+ ps.18,000	31	ps.69,392,000	ps.67,633,000	+ps.1,759,000	Ord. Stk.	7	5	8
	B.A.G.S.	5,080	1.2.47	ps.4,936,000	+ps.738,000	31	ps.108,484,000	ps.102,976,000	+ ps.5,508,000	Ord. Stk.	13¾	10½	16
	B.A. Western... ...	1,924	1.2.47	ps.1,537,300	+ ps.286,000	31	ps.39,450,000	ps.36,899,000	+ ps.2,551,000	,,	12¾	9½	16
	Cent. Argentine	3,700	1.2.47	ps.3,692,625	+ ps. 85,875	31	ps.98,838,282	ps.95,859,400	+ ps.2,978,882	,,	9½	7	10½
	Do.	—	—	—	—	—	—	—	—	Dfd.	5	2⅞	5½
	Cent. Uruguay	970	1.2.47	36,699	— 7,317	31	1,129,187	1,203,704	— 74,517	Ord. Stk.	7½	4	11
	Costa Rica	262	Nov., 1946	20,530	— 6,373	22	132,743	155,029	— 22,286	Stk.	16½	13	9
	Dorada	70	Dec., 1946	32,000	+ 3,124	52	369,575	359,365	+ 10,210	1 Mt. Deb.	103	102	100½
	Entre Rios	808	1.2.47	ps.439,700	—ps.18,400	31	ps.13,317,700	ps.13,106,500	+ ps. 211,200	Ord. Stk.	7½	4½	7
	G.W. of Brazil	1,030	1.2.47	43,100	+ 9,700	5	186,600	156,800	+ 29,800	Ord. Stk.	30/-	23/6	19/-
	Inter. Ctl. Amer. ...	794	Dec., 1946	$918,471	+$115,935	52	$10,462,386	$8,932,750	+ $1,529,636	—	—	—	—
	La Guaira	22¾	Jan., 1947	$125,276	— $216	4	$125,276	$125,492	— $216	5 p.c. Deb.	78	70	65
	Leopoldina	1,918	1.2.47	67,204	+ 7,734	5	297,993	258,372	+ 39,621	Ord. Stk.	4½	3½	3¾
	Mexican	483	31.5.46	ps.1,464,000	+ps.459,100	22	ps. 7,706,200	ps.13,441,600	+ ps.5,220,200	Ord. Stk.	¼	⅛	⅜
	Midland Uruguay	319	Dec., 1946	14,771	— 6,303	26	109,866	115,875	— 6,009	—	—	—	—
	Nitrate	382	15.1.47	7,771	— 3,245	2	7,771	11,016	— 3,245	Ord. Sh.	75/6	67/6	72/6
	N.W. of Uruguay	113	Dec., 1946	4,837	— 1,288	26	32,946	35,276	— 2,330	—	—	—	—
	Paraguay Cent.	274	31.1.47	$62,365	— $2,750	31	$1,955,925	$1,876,931	+ $78,994	Pr.Li.Stk.	79⅞	77	50
	Peru Corp.	1,059	Jan., 1947	148,260	+ 1,677	31	1,068,462	996,061	+ 72,401	Pref.	10⅜	7⅛	8½
	Salvador	100	Nov., 1946	c90,000	— c1,000	22	c331,000	c467,000	— c136,000	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	60¾	50½	132½
	Taltal	156	Dec., 1946	3,680	+ 480	26	29,410	15,520	+ 13,890	Ord. Sh.	17/-	10/5	18/6
	United of Havana	1,301	1.2.47	7,745	+ 8,785	31	1,560,182	1,468,792	+ 91,390	Ord. Stk.	3	1	1⅜
	Uruguay Northern	73	Dec., 1946	1,242	— 637	26	7,887	10,943	— 3,056	—	—	—	—
Canada	Canadian National	23,482	Nov., 1946	9,282,000	+ 705,500	48	91,193,750	99,564,250	— 8,370,500	—	—	—	—
	Canadian Pacific	17,037	31.1.47	2,247,500	+ 168,250	4	5,839,750	5,827,250	+ 12,500	Ord. Stk.	24	14⅜	18½
Various	Barsi Light†	202	30.12.46	22,725	— 5,107	35	185,040	179,450	+ 5,580	Ord. Stk.	131	123	112½
	Beira	204	Sept., 1946	90,848	+ 17,136	52	950,694	920,575	+ 30,119	—	—	—	—
	Egyptian Delta	607	15.1.47	22,167	+ 1,560	41	465,630	437,730	+ 27,900	Prf. Sh.	10	8½	6
	Manila	—	—	—	—	—	—	—	—	B. Deb.	71	55½	74½
	Mid. of W. Australia... ...	277	31.12.46	19,408	+ 836	26	99,122	100,474	— 1,352	Inc. Deb.	97½	85	65
	Nigeria	1,900	Nov., 1946	461,603	+ 49,595	34	3,076,711	2,032,386	+ 1,044,325	—	—	—	—
	Rhodesia	2,445	Sept., 1946	541,147	+ 24,052	52	6,174,663	6,069,663	+ 105,000	—	—	—	—
	South African	13,323	4.1.47	993,925	+ 71,698	40	45,816,911	40,360,895	+ 5,456,016	—	—	—	—
	Victoria	4,774	Sept., 1946	1,225,188	+ 2,639	—	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee